



A Study of Land Uses
Compatible with or Adjacent to
**McCHORD AIR FORCE BASE
and
FORT LEWIS, WASHINGTON**

FEBRUARY 28, 1992

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McChord AFB and Fort Lewis

JOINT LAND USE STUDY

Prepared for:

**Pierce and Thurston Counties, Nisqually Indian Tribe, Cities
and Towns of Lacey, Yelm, Rainier, Tacoma, Dupont, Steilacoom,
Roy, Military Installations of McChord AFB, Ft. Lewis and
Camp Murray.**

February 28, 1992



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JOINT LAND USE STUDY

EXECUTIVE SUMMARY

Joint land use means cooperative planning for compatible use of lands next to the military reservations. The goal of the Joint Land Use Study (JLUS) is to encourage compatible development and redevelopment of areas around the military installations that balances the needs of the communities with the military mission. The military mission is two fold: national defense and training of troops in preparation for national defense.

As population growth in Pierce and Thurston Counties occurs around the military installations, an issue emerges for both the military installations and surrounding communities. Can the military continue to fulfill its mission without threatening the activities of surrounding communities? Can growth occur adjacent to installations without threatening the ability of the military to continue its mission?

The Joint Land Use Study offers long-range and short-range strategies for coordinated land use. Operations on the installations or their direct effects extend beyond their boundaries. This is one of many environmental factors for consideration in long-range planning for land adjacent to the military installations. Although the Joint Land Use Study recommends military facilities operate in a manner considerate of their effects on surrounding communities, the Joint Land Use Study centers on civilian land uses.

Study participants are the military installations of McChord Air Force Base, Fort Lewis and Camp Murray and their neighboring civilian jurisdictions. Participating local governments include Pierce and Thurston Counties, the Nisqually Indian Tribe, as well as the cities and towns of Tacoma, Steilacoom, DuPont, Roy, Yelm and Rainier. The study area extends 1/2 mile from the installation boundaries, the 65 Ldn aircraft noise contour north of McChord AFB and Noise Zone II south of Fort Lewis.

Jointly funded by the United States Department of Defense and Pierce County, the scope of analysis was prescribed by the contract with the Department of Defense and concerns expressed at five public workshops conducted in Pierce and Thurston Counties. Topics include aircraft safety, aircraft noise; training and artillery/small arms safety, artillery noise, circulation, growth management and communication. The study presents relevant information necessary to generate recommendations on these topics. Issues beyond the scope of the study, but important to the workshop participants, are described and referred to agencies with jurisdictions for analysis and resolution.

Technical and Citizen Review Committees provided oversight, ideas, and refined the draft document and its recommendations. Technical Review Committee members represented the study participants. The Citizen Review Committee members represented geographic areas. Pierce County personnel worked as staff and facilitators of the committees as well as the contract manager. Pierce County staff assisted in the identification of issues, gathered data, policies and regulations; compiled the land use inventory; performed analyses of existing land use, zoning and compatible use guidelines; prepared maps and drafted the Study.

Executive Summary

The Study relies on existing information and studies, especially adopted policies and regulations of participating local governments, the McChord AFB Air Installation Compatible Use Zone Study (AICUZ) and the Fort Lewis Installation Compatible Use Zone Study (ICUZ). AICUZ and ICUZ studies identify the extent and location of aircraft and artillery noise, identify aircraft accident potential zones, present compatible land use guidelines for these areas, and recommend compatible uses.

Joint Land Use Study recommendations reflect concerns raised and arguments made at public meetings. Five public workshops were conducted in March and April of 1991 to identify issues and problems for citizens residing near the military installations. Public meetings were held in January, 1992 in five communities to review the draft Joint Land Use Study and its recommendations.

Implementation strategies set out the actions that individual local governments can take to achieve the recommendations. Responsibility for implementing the study's recommendations falls upon the individual jurisdictions, as well as the business community and private citizens. It is expected that each participating local government will review the recommendations and adopt provisions in a manner reflecting its own circumstances and community preferences. Consistency and coordination in implementation is urged to facilitate understanding and foster the cooperation of business and the general population.

The Study assumes that McChord AFB, Camp Murray and Fort Lewis will be an ongoing presence in Pierce and Thurston Counties, providing diversity to the employment profile. Military population is expected to remain relatively constant with periodic fluctuations. Eight thousand (8,000) more uniformed personnel are expected between 1991 and 1995. Although this is only 1,400 personnel over 1986 levels, it demonstrates the periodic fluctuations in population and employment that are likely. Projections of military population are difficult because of the rapidly changing defense policy of the country.

The civilian population growth rate is forecasted to be stable. The new Boeing plant in Frederickson is estimated to directly stimulate a 28,000 person increase in population. Northwest Landing in Dupont is expected to increase the population of Dupont from 495 to 15,000 people at full development. Approximately 100,000 more people are expected in Pierce County by the year 2010. Another 100,000 people are expected in Thurston County in the year 2010. As the two counties grow, development pressure near the installations will increase.

The installations provide fifty percent (50%) of their housing need at present. This enables many people to live off-installation. Within a 30-minute driving time of the installations are many cities and large urban areas. Pierce County alone has 22,600 apartment units, 6% which are vacant. Total housing units number over 238,000 including the cities. Pierce County has been adding approximately 1,500 new housing units per year.

Although affordable off-installation housing is an issue for military personnel and local communities alike, the JLUS did not undertake a detailed analysis of off-base housing. The issues of quality affordable housing for a fluctuating military population are referred to the housing task force of the Pierce County Comprehensive Plan update and its Thurston County counterpart.

The JLUS divides the question of compatible land use into issues related to Aircraft Safety, Aircraft Noise, Artillery Safety, Artillery Noise, Circulation, Growth Management, and Communication.

Aircraft safety discussion centers on two areas, the Clear Zone and two Accident Potential Zones. The Study focused on the zones north of McChord because the southern zones of McChord and those of Gray Army Airfield are fully contained within military boundaries.

The Clear Zone is 3,000 feet by 3,000 feet adjacent to the end of the runway. The Air Force found that 28% of all Air Force aircraft accidents occur in the Clear Zone. In this zone, residences are incompatible as are commercial and industrial uses that have people on site. The majority of existing land uses are incompatible. Zoning classifications allow for incompatible development.

The Joint Land Use Study recommends that the Air Force purchase the remaining 50.5 acres of privately held property in the Clear Zone of McChord AFB. If complete purchase is not authorized, then purchase of development rights is suggested. If that cannot be done, or until it can be accomplished, the study suggests that Pierce County prohibit new residential uses and other uses that concentrate people in the Clear Zone.

Accident Potential Zone I (APZ I) extends from just south of SR-512 to South 93rd Street, one-half block east of South Tacoma Way on the west, and Fife Street on the east. An estimated 1,666 people live in APZ I in 1,229 homes. Seven and eight-tenths percent (7.8%) of all Air Force aircraft accidents have occurred in this zone. Residences are considered incompatible here as are schools, medical facilities, and commercial and industrial uses that concentrate people on a development site. Existing Pierce County zoning does not discourage concentrations of people and permits residences at high densities.

Five percent (5%) of Air Force aircraft accidents have occurred in Accident Potential Zone II (APZ II). The McChord AFB Accident Potential Zone II is governed by Pierce County and by the City of Tacoma north of 80th Street. It stretches from South 93rd to 72nd Streets, one-half block east of South Tacoma Way on the west, and Fife Street on the east. Nearly 3,326 people currently live in 1,506 homes in APZ II. The Air Force advises that residences be low-density and that uses that attract concentrations of people be discouraged. Many mobile home parks as well as apartments and schools and established single family residential neighborhoods exist in the area.

Executive Summary

The JLUS study recommends that Pierce County and the City of Tacoma develop regulations that minimize incompatible uses and suggests that the regulations be consistent. The Study advises that Pierce County and the City of Tacoma officially declare the accident potential zones as accident potential areas for planning purposes. Landlords, referral agencies, sellers, realtors and lenders are asked to voluntarily include disclosure statements in rental and real estate purchase agreements. Finally, the study recommends that the business community lead the way in promoting voluntary programs.

In addition to aircraft safety concerns, these areas also have the highest aircraft noise levels. Whenever possible, takeoff occurs to the south so people are not affected. But prevailing winds result in 75% of departures to the north. The extra noise associated with departures from the north are caused by "takeoff thrust".

In the 1976 McChord Air Installation Compatible Use Zone Study, the Air Force mapped areas of very high aircraft noise and suggested land use compatibility guidelines consistent with what was used at other airports, civilian and military. The mapped areas are considered "noise sensitive areas" in the JLUS and include all areas lying between the 65 Ldn noise contour and McChord AFB. Aircraft noise contours extend across Pierce County and City of Tacoma. Gray Army Airfield contours at Fort Lewis and the southern exposure of McChord AFB fall within military installation boundaries.

Noise sensitive uses are uses of the land that involve activities that are interrupted by the presence of loud noise. Typical land uses sensitive to noise include schools, outdoor recreation, hospitals and other medical facilities, pasture lands, and residences. The Air Force has advised that uses adversely affected by high noise levels need to avoid these areas. In areas within the 65 Ldn noise contour, noise sensitive uses need noise insulation. In areas above 75 Ldn, residences should be avoided due to public health risks. The U.S. Department of Housing and Urban Development (HUD) suggests maintaining an interior noise level of 45 Ldn for noise sensitive uses, especially residences.

The Joint Land Use Study found that much residential zoning occurs in areas of extremely high aircraft noise. Other noise sensitive uses such as schools and churches are also located in areas of severe noise. Zoning as presently configured allows these incompatibilities to occur.

The JLUS recommends that Pierce County and the City of Tacoma adopt areas within the 65 Ldn noise contour as "noise sensitive areas". The study suggests that Pierce County and the City of Tacoma coordinate amendments to their policies and regulations to be consistent with land use compatibility guidelines. The Study recommends that Building Codes implement HUD standards by requiring construction that reduces aircraft noise inside noise sensitive uses to 45 decibels. Integration of noise attenuation with housing assistance programs is advised as well as looking into a program to assist with insulating existing noise sensitive uses. Voluntary disclosure of noise effects by landlords and real estate related businesses is suggested. Local governments are asked to provide information to the public on how to remodel businesses and residences for aircraft noise reduction.

The military is asked to construct noise barriers, monitor flight patterns, perform engine runups where the fewest residences are affected, and use aircraft with quieter engines. Finally, when new noise contours are drawn, the study recommends that affected people be notified.

Fixed-wing aircraft noise contours are fully contained within Fort Lewis boundaries, however, helicopter noise was noted as affecting residents and animals. Because helicopter operations do not have standardized flight tracks, they are not included in aircraft noise contours. Helicopters abide by Federal Aviation Administration (FAA) and Army regulations. Where permitted, they pass over civilian property at an altitude of 2,000 feet. Avoidance areas are maintained over residential areas especially. Eighty-two percent (82%) of the flights occur in the day (before 10 p.m.). The number of flights has shifted with troop assignments. In 1988, 200 helicopters performed 400 missions daily. Now there are only 25 helicopters. An increase to 180 helicopters is expected to substantially increase the number of helicopter operations to near levels before the inactivation of the 9th Infantry.

The JLUS recommends that the Army continue to monitor noise sensitive areas and adjust avoidance areas as needed to minimize adverse effects. The study suggests that the military buffer areas be increased for night operations, both in altitude and horizontal distance. The military is encouraged to use quieter helicopters.

The major noise sources for Fort Lewis are weapons firing and operation of military aircraft. Fort Lewis is required to accommodate larger, technologically more complex, longer-range weapons. This can mean placing firing points near installation boundaries to guarantee safe and secure impact areas. All firing ranges have specific limitations on the type of weapons which can be fired and the direction in which the weapons can be fired. Improving combat readiness means training soldiers more frequently, with effects on adjacent communities. For the Army, such sound levels are both part of the job of operating a defense weapons system and a necessary training condition.

Local governments need to ensure that development of areas near the Fort is compatible by using effective planning and development principles. Noise sensitive land uses should be located away from noise sources.

In 1988, the ICUZ Study looked at the effects of Fort Lewis operations on surrounding communities, drew blast impact noise contours and described compatibility zones. Three noise zones were mapped. In Noise Zone I, noise is considered moderate and acceptable for noise sensitive uses. This does not mean that there is no loud artillery noise but that the average sound level is low according to the projections provided by the Army. In Noise Zone II, there is significant noise exposure. Noise sensitive uses are generally unacceptable without noise insulation of the building and careful site design. In Noise Zone III, noise is severe and unacceptable for noise sensitive uses. Noise Zone III is the immediate area of the blast impact.

Executive Summary

The Zone II contour for blast noise extends slightly off-post in the vicinity of the Nisqually Indian Reservation. Otherwise, all noise zones of consequence currently lie within the installation. However, the Army suggests that local governments take precautions in deciding how the area develops. To take into consideration the likelihood of severe noise they advise keeping noise sensitive uses from locating along the perimeter of the installation.

The JLUS recommends that the Army periodically measure actual noise events, vibration and concussion effects, recalibrate the model that identifies the noise zones accordingly and produce updates of the ICUZ study so that information is current and accurate. The Study recommend updates of the ICUZ study when missions change but not less than every three years. The Army is asked to measure and provide information to local governments on citizens on single event noise levels.

Local governments are asked to provide information to residents on how to reduce noise in building remodels and new construction. Pierce County, Thurston County and the Nisqually Tribe are asked to coordinate land use regulations that incorporate compatible land use recommendations including the noise contours and locate noise sensitive uses away from Fort Lewis boundaries. They are also asked to ensure that new construction in Noise Zone II reduce interior noise levels to the 45 decibel HUD standard. Disclosure statements are recommended for both public and private agencies and individuals.

Artillery fire, use of flares and rockets, and campfires can be dangerous during the summer months and other dry periods. Citizens at public workshops expressed concern that fires started on-post could spread off-installation to residential areas putting people at risk. In some cases residences are located within 50 feet of installation boundaries near training areas.

Cooperative mutual aid agreements exist between the installations, civilian fire districts and police. Nevertheless, the JLUS study recommends that the military restrict fire-prone activities during dry weather. The Study suggests making sure that training areas are accessible by fire fighting equipment, that training areas are designed to prevent spread of wild fire off-post, and that structures being built on lands adjacent to Fort Lewis provide fire separation from the Fort's boundaries.

There were four main circulation issues identified for evaluation: contribution to local and regional traffic congestion, reservation geography as a subregional traffic barrier, congestion at gates, and gate and road closures.

The military installations use the civilian road network for troop and material transport and to carry commuter traffic. Congestion on roads surrounding the installations is created less by the installations and more by civilian growth in the vicinity which removes capacity from area roads. In the last three years, personnel levels have been low yet congestion increases.

Convoys are scheduled only in off-peak hours to avoid causing traffic congestion and they use less traveled roads whenever possible. No evidence was uncovered to support the suggestion that convoys are a problem.

The JLUS recommends that the installations participate in transportation system demand management programs, transit, carpools, and related programs. The federal government is asked to participate in the design and funding of transportation improvements to the extent that the installations contribute to the problem. Off-base transportation needs are suggested to be evaluated periodically by the installations and that information be shared with local governments. The study recommends that a high priority be given to street improvements that reduce congestion in the vicinity of the installations. Finally long-range transportation planning should consider the military's long term need and include the military in plan development.

As Pierce County develops pressure is mounting for a cross-base transportation corridor to link Tacoma and Lakewood with Spanaway, Frederickson and Bethel areas. The Transportation Division of Pierce County Public Works has contracted for a study of alignment and design alternatives. The study is due to be completed in April, 1992 public meetings will be held on the study's recommendations

The military installations have stated that any cross-base corridor needs to address the following concerns; interference with installation activities, restricted military access both at Fort Lewis and McChord AFB, noise-insulating berms and other design features near on-installation housing, and road closure of unsecured cross-installation roads. Much of the traffic using a new route is projected to be generated from the installations.

The JLUS recommends that cross-installation roads be developed in accordance with civilian and military transportation plans, based on projected need, environmental constraints, and meet the needs of the military installations. The study suggests that cross-installation routes accommodate non-motorized transportation needs, such as bicycles, as a form of transportation system demand management.

Gate congestion occurs when security conditions arise. Although there has been little gate congestion in the last couple of years, with the increase in personnel projected for 1994 and 1995, gate congestion is likely to increase.

The JLUS recommends that as freeway interchanges are improved, they be redesigned to reduce the effect of gate congestion on the freeway. The study also advises that the military and local governments collaborate on solutions to gate congestion.

Executive Summary

Military installation roads and gates get closed for national security, base security and other reasons. The federal government owns the military installations and the road system. Access to schools, to other roads, to jobs and the like, that pass through military grounds may not be continuous. People choose to live in a certain area because of the road system available at the time. When closures occur, they affect people who have grown to rely on them. Land uses and public services delivery are planned assuming uninterrupted use of the installation roads.

Choices on service delivery routes and land uses need to be based on access routes that are owned and controlled locally. People need to make informed choices. In order for that to occur, information on real conditions must be made available to the public.

The JLUS suggests that a public information program provide information to citizen communities on security requirements and what can happen to federal roads under certain conditions. It also advises local governments and service providers to plan on service delivery on the basis of the public transportation network to meet access needs. Finally it suggests that mitigation plans be developed for road closures.

Updates of the Comprehensive Plans of Pierce and Thurston County and their cities is required by the Growth Management Act. In order for military installations to get their needs met, active participation in development of these plans is imperative.

JLUS recommends establishing a regular meeting between the military commanders and local and federal officials on topics of mutual concern. It suggests inviting the military to participate on growth management committees. It also suggests incorporating the military installations into the local environmental review processes.

In lieu of a third runway at Sea-Tac airport, a supplemental airport has been considered. Locations under review is joint use of McChord AFB and a site in East Fort Lewis. In order for this to occur, additional runways would have to be constructed. Other effects would be infringement on Fort Lewis and McChord training exercises, difficulty with installation security, interruption of civilian service during national emergencies, and increased aircraft noise and accident potential for the citizens of Pierce County and the City of Tacoma.

The JLUS recommends that local governments oppose use of active military facilities for a commercial airport.

Joint land use cannot be balanced without good communications. Residents around the installations need to make the installations aware of how they are feeling and the military needs to inform citizens of training activities and similar events that effect their lives. The installations have requirements and needs as well that should be shared with civilians.

The JLUS recommends expanding the current public information program to include more newspaper and television coverage, provide forms for citizen complaints and conduct periodic opinion surveys. The members of the news media are encouraged to place a high priority on military news.

Recommendations of the Joint Land Use Study to reinforce a harmonious relationship between the military and surrounding communities. The extent to which compatible land use ensues depends on the willingness of all parties to communicate openly and respect each other needs. All of the participating jurisdictions committed to respect the study findings and to consider implementation of applicable recommendations. A model adoption Resolution is contained in Appendix A.

JOINT LAND USE STUDY

RECOMMENDATIONS

AIRCRAFT SAFETY

Issue #1: Land still under private ownership in Clear Zone

RECOMMENDATIONS

1. The Department of Defense should purchase in fee simple all property in the McChord AFB Clear Zone, supported actively by local government.
2. If fee simple purchase is not possible, the military should purchase the development rights in the Clear Zone.
3. Until acquisition of the Clear Zone occurs, Pierce County should restrict development and other land uses that assemble concentrations of people in the McChord AFB Clear Zone as follows:
 - a. Prohibit new residential development.
 - b. Encourage the relocation of existing residents to locations where land use is compatible with Joint Land Use Study recommendations.
 - c. Permit industrial, manufacturing, and warehouse uses with fewer than an average of 25 people per hour/per acre in a 24-hour period and noise reduction construction in public areas which meets the United States Department of Housing and Urban Development (HUD) standards.
 - d. Allow low-intensity uses such as mining; cemeteries; agriculture, except livestock; open-space; and utilities.
4. Until acquisition of the Clear Zone occurs, Pierce County should prohibit the following land uses:
 - a. Any use which involves release of airborne substances, such as steam, dust, and smoke which interfere with aircraft operations.
 - b. Any use which emits light, direct or indirect (reflections), which interfere with pilot's vision.
 - c. Any use which emits electrical currents which may interfere with communication systems or navigational equipment.
 - d. Any use which attracts birds or waterfowl [i.e., sanitary landfills, feeding stations, and the growth of certain vegetation].
 - e. Any use which would have structures within 10 feet of aircraft approach-departure and/or transitional surfaces.

5. For proposed new development in the Clear Zone, environmental checklists should be referred to the McChord AFB Commander for comment prior to threshold determination.
6. Puget Power and other utilities should work to eliminate all above-ground transmission lines within the Clear Zone.
7. Pierce County should support open-space tax exemptions for qualified properties in the Clear Zone.

Issue #2: Incompatible land uses in the Accident Potential Zones

RECOMMENDATIONS

1. Pierce County should develop regulations that minimize incompatible uses in Accident Potential Zone I as follows:
 - a. Prohibit any new residential development.
 - b. Prohibit any new use which involves release of airborne substances, such as steam, dust, and smoke which interfere with aircraft operations.
 - c. Prohibit any new use which emits light, direct or indirect (reflections), which interfere with pilot's vision.
 - d. Prohibit any new use which emits electrical currents which may interfere with communication systems or navigational equipment.
 - e. Prohibit any new use which attracts birds or waterfowl [i.e., sanitary landfills, feeding stations, and the growth of certain vegetation].
 - f. Prohibit any new use which results in a concentration of people, more than an average of twenty-five (25) people per hour/per acre in a 24-hour period.
2. Pierce County and the City of Tacoma should coordinate land use regulations developed to minimize land use incompatibilities in Accident Potential Zone II (APZ II) as follows:
 - a. Prohibit any new use which involves release of airborne substances, such as steam, dust, and smoke which interfere with aircraft operations.
 - b. Prohibit any new use which emits light, direct or indirect (reflections), which interfere with pilots vision.
 - c. Prohibit any new use which emits electrical currents which may interfere with communication systems or navigational equipment.
 - d. Prohibit any new use which attracts birds or waterfowl [i.e., sanitary landfills, feeding stations, and the growth of certain vegetation].
 - e. Prohibit any new use which results in a concentration of people, more than an average of twenty-five (25) people per hour/per acre in a 24-hour period.
 - f. Prohibit any new development or redevelopment which results in an increase in density or intensity of current development.

Recommendations

3. For development proposals in Accident Potential Zones I & II, environmental checklists should be referred to the McChord AFB Commander for comment prior to a threshold determination.
4. New churches, schools, libraries, and similar buildings that concentrate people should not be located in Accident Potential Zones I or II.
5. Pierce County and the City of Tacoma should adopt Aircraft Accident Potential Areas as identified in the McChord AFB Air Installation Compatible Use Zone Study (AICUZ).
6. Upon adoption of accident potential zones, landlords, housing referral agencies, real estate agents, sellers, and lenders should include disclosure statements in rental agreements and purchase agreements.
7. Local governments should encourage the business community to lead the way on a voluntary program to remove land use conflicts in the Accident Potential Zones.
8. The military installations should update the Fort Lewis Installation Compatible Use Zone Study (ICUZ) and the McChord AFB Air Installation Compatible Use Zone Study (AICUZ) as missions change or land use compatibility standards change, but not less than every three (3) years in order to allow local jurisdictions to implement the Joint Land Use Study recommendations.

AIRCRAFT NOISE

Issue #1: *Noise sensitive land uses are allowed to develop in areas of very high aircraft noise*

RECOMMENDATIONS

1. Pierce County and the City of Tacoma should adopt the area within the 65 Ldn noise contour shown in the McChord AFB Air Installation Compatible Use Zone Study (AICUZ) as "aircraft noise sensitive" areas in local Environmental Regulations. Aircraft noise sensitive areas should be updated when new noise contours are identified in amendments to AICUZ.
2. Pierce County and the City of Tacoma should coordinate land use regulations developed for the Aircraft Noise Sensitive Areas.
3. Pierce County and the City of Tacoma should insure that Building Codes reduce aircraft noise transmissions through the building envelope to meet

the United States Department of Housing and Urban Development (HUD) standards.

4. Upon adoption of "aircraft noise sensitive" areas, landlords, housing referral agencies, real estate agents, sellers, and lenders should include disclosure statements in rental agreements and purchase agreements for properties in "aircraft noise sensitive" areas.
5. Policies and regulations for land use actions within the 65 Ldn noise contour should be reviewed for consistency with the McChord AFB Air Installation Compatible Use Zone Study (AICUZ) and the Fort Lewis Installation Compatible Use Zone Study (ICUZ) recommended guidelines.
6. Pierce County and the City of Tacoma should explore obtaining federal funding for aircraft noise reduction when remodeling buildings within the 65 Ldn noise contour, consistent with the Department of Housing and Urban Development (HUD) standards.
7. All affected parties should be notified when 65 Ldn noise contours are revised.
8. Pierce County should adopt regulations in the 75-80 Ldn noise contour as follows:
 - a. Permit no new residential development.
 - b. Permit no day care facilities, schools or other facilities which incorporate outside activities.
 - c. Permit low intensity uses such as golf courses.
 - d. Permit manufacturing; cultural facilities such as auditoriums, public meeting facilities, theaters; and medical facilities when the building envelope reduces aircraft noise transmissions to the Department of Housing and Urban Development (HUD) standards.
9. The military should evaluate construction of sound barriers and construct where found as effective sound management techniques.
10. The military should continue to monitor and evaluate flight patterns to reduce land use incompatibility.
11. Local governments should provide information to the public on how to achieve aircraft noise reduction when remodeling buildings.
12. The military should continue to employ technological advancements in quieter aircraft.
13. The military and local governments should investigate integrating noise attenuation with existing housing assistance programs within the 65 Ldn noise contour.

Recommendations

14. The Department of Defense should periodically measure actual aircraft noise levels at McChord AFB and Gray Army Airfield at Fort Lewis, recalibrate noise models to reflect actual conditions, and reconfigure noise contours in the McChord AFB Air Installation Compatible Use Zone Study (AICUZ) and the Fort Lewis Installation Compatible Use Zone Study (ICUZ) based on the findings.
15. Aircraft noise should be measured near Pacemaker Airstrip in eastern Fort Lewis with findings and recommendations included in future updates of the Fort Lewis Installation Compatible Use Zone Study (ICUZ).

Issue #2: Helicopter noise affects residents and animals

RECOMMENDATIONS

1. The military installations should continue to monitor areas sensitive to helicopter noise and modify corresponding avoidance areas and required flight altitudes.
2. The military installations should continue to regularly brief their pilots and monitor corresponding avoidance areas and required flight altitudes.
3. Local governments should encourage the military to explore new technologies to reduce helicopter noise emissions.
4. The military should increase buffer areas during night operations by both height and horizontal measurements.
5. The military should modify their definition of night time operations to replace the beginning time of 10 p.m. with "7 p.m. or End of Evening Nautical Twilight (EENT), whichever comes later".
6. Local governments adjacent to the military installations should regularly advise citizens of helicopter activity in the area.

Issue #3: Touch-and-go landings, ground run-ups and nighttime flying are major causes of noise irritation

RECOMMENDATIONS

1. Dismounted engine run-ups should continue to occur in special sound buffered test facilities.

2. Mounted aircraft engine run-ups should continue to occur as far away as possible from residential areas and noise sensitive land uses; or where topography reduces noise.
3. Simulation training should be increased to decrease noise problems.
4. The military should develop public information programs to explain the need for training flights, ground run-ups and nighttime flying.
5. The military should continue to schedule night operations at remote locations when feasible.

TRAINING AND ARTILLERY/SMALL ARMS SAFETY

Issue #1: Danger to civilian property from fires started on-base

RECOMMENDATIONS

1. Insure civilian and military fire fighting equipment have access to military training areas.
2. The military should continue to monitor fire risks related to training activities to prevent fire risks off-installations.
3. Future construction adjacent to the installation should provide for fire protection at Fort Lewis boundaries.
4. The Department of Defense should develop noise contours to reflect single-noise levels starting at 45 decibels, using five (5) decibel increments.

ARTILLERY NOISE

Issue #1: Residents surrounding Fort Lewis are affected by artillery and small arms noise

RECOMMENDATIONS

1. The military should periodically measure actual impulsive noise levels at Fort Lewis, recalibrate noise models to reflect actual conditions, and reconfigure noise contours in the Fort Lewis Installation Compatible Use Zone Study (ICUZ) based on the findings.

Recommendations

2. Fort Lewis should update the Installation Compatible Use Zone Study (ICUZ) when there is a mission change or land use compatibility standards change, but not less than every three (3) years to allow local jurisdictions to implement the Joint Land Use Study recommendations.
3. Local governments should provide information to the public on how to achieve noise reduction when remodeling buildings.
4. The Nisqually Indian Tribe and Thurston County should adopt as "noise sensitive" areas in local Environmental Regulations areas such as the Noise Zone II (NZ II) noise contour.
5. Local governments should insure that Building Codes reduce artillery noise transmissions through the building envelope to meet the Department of Housing and Urban Development (HUD) standards in "noise sensitive" areas.
6. Upon adoption of "noise sensitive" areas, landlords, housing referral agencies, real estate agents, sellers, and lenders should include disclosure statements in rental agreements and purchase agreements in "noise sensitive" areas.
7. Affected jurisdictions should incorporate the Installation Compatible Use Zone Study (ICUZ) noise contour maps and the "Recommended Land Uses for Installation Compatible Use Zone (ICUZ) Program Noise Zones" for Noise Zone II.
8. Affected jurisdictions should prohibit the following land uses within Noise Zone II:
 - a. New residential uses, unless the design of the structure and general site plan incorporate noise reduction measures to meet the Department of Housing and Urban Development (HUD) standards.
 - b. Public services and quasi-public services such as hospitals, public meeting rooms, and libraries, and cultural, recreational and entertainment land uses unless the design of the structure and general site plan incorporate noise reduction measures to meet HUD standards.
 - c. Schools, day care facilities, and other facilities which incorporate outside activities.
9. The military and local jurisdictions should develop and adopt programs which encourage preservation of natural vegetation for aesthetic and noise attenuation purposes.
10. The Department of Defense should measure actual artillery-related vibration and concussion levels in areas surrounding the Fort Lewis, map impact areas based on the degree of effect, and include this information in

subsequent updates of the Fort Lewis Installation Compatible Use Zone Study (ICUZ).

11. Firing point noise should be incorporated into noise measurements and be described and mapped in the next update of the Fort Lewis Installation Compatible Use Zone Study (ICUZ).
12. Local governments adjacent to Fort Lewis should direct the following land uses away from property abutting the installation boundary:
 - a. High-density residential.
 - b. Public buildings (such as schools, medical facilities, public meeting facilities, and churches).
 - c. Cultural facilities.

CIRCULATION

Issue #1: Contribution to local and regional traffic congestion

RECOMMENDATIONS

1. The military should cooperate with local governments to develop transportation demand management programs.
2. The military installations should assist in the analysis and planning of transportation improvements to accommodate traffic generated from military activities.
3. Transportation funding sources should be asked to give special consideration to funding transportation projects that support the military mission.
4. Encourage local jurisdictions to place a high priority on transportation improvements that reduce congestion in the vicinity of military installations.
5. The Regional Transportation Plan and all other transportation plans should consider the military's projected long-term transportation needs.
6. The military should provide information on their long-term transportation needs to the local governments.
7. The Puget Sound Regional Council should include the military as a member of the Regional Transportation Plan Policy Board.

Recommendations

Issue #2: Military Installations as a Subregional Traffic Barrier

RECOMMENDATIONS

1. Cross-base corridors, when constructed, should be developed in accordance with affected civilian and military installation transportation plans.
2. The viability of cross-base corridors (arterial or highway) should be determined on the basis of detailed studies of population projections, military mission, land availability, land use projections, and environmental analysis of alternative routes and corridors.
3. Cross-base corridors should consider accommodating non-motorized transportation, including bicycles and mass-transit alternatives; when consistent with local and regional comprehensive plans and military master plans.

Issue #3: Congestion at gates

RECOMMENDATIONS

1. As freeway interchanges are improved, they should be redesigned to reduce congestion resulting from installation access control.
2. Local governments and the military should jointly consider solutions to gate congestion that enhance the flow of traffic to and from the installations.

Issue #4: Military Gate and Road Closure

RECOMMENDATIONS

1. The military should use public information programs to inform citizens near the installations how the military security requirements can effect roads.
2. Local governments should plan public services, transportation, land use, and other decisions on the ability of the public transportation network to meet access needs without depending on military roads.
3. Local governments and the military should cooperate on the development of mitigation plans for military road closures that affect public use.

GROWTH MANAGEMENT

Issue #1: Growth Management and Coordination of Land Use

RECOMMENDATIONS

1. Local governments should strongly consider the military installations as an affected agency for land use planning decisions.
2. Local governments should invite the military to participate as members on growth management committees.
3. Local governments should provide opportunities for the military to participate in local and regional planning issues and programs.
4. The military should actively participate in local growth management committees and programs.
5. The military installations and local governments should establish periodic meetings of elected local, state and federal officials and military commanders on growth management issues of mutual concern.
6. The military should consistently provide statistical data to civilian planners for developing land use, housing, and transportation plans.
7. A standing review committee, comprised of representatives from Joint Land Use Study participating jurisdictions, should be formed to meet and be briefed on major development proposals and environmental concerns on and off the installations.
8. Environmental policies adopted by the military should continue to reinforce the environmental policies of surrounding jurisdictions.
9. Comprehensive Plan policies adopted by local governments pertaining to environmental issues, should agree with and not degrade the environmental policies of the military installations.
10. The military and local jurisdictions should develop and adopt programs to encourage preservation of natural vegetation for aesthetic and noise attenuation purposes.

Recommendations

Issue #2: Sea-Tac Auxiliary Airport

RECOMMENDATIONS

1. Local governments should oppose future use of military facilities for a commercial airport.

COMMUNICATION

Issue #1: Collaboration between military and local residents, communities and local governments on issues of mutual interest

RECOMMENDATIONS

1. The military should expand their existing public information program to include the following methods of informing local residents and receiving their comments:
 - a. submit articles to local newspapers;
 - b. submit information for display on "public access" television channel;
 - c. conduct periodic surveys for public opinion;
 - d. provide information boards;
 - e. provide comment forms for citizen's complaints;
 - f. explore extending Fort Lewis cable channel to adjacent communities.
2. Encourage local news media to place a higher priority on routine military functions that have an impact on the surrounding communities and land uses.
3. The Yelm Chamber of Commerce is encouraged to form a "military affairs committee" to aid in the communication and public awareness of Fort Lewis range activities and schedules.

GLOSSARY

Accident Potential Zone I (APZ I): A zone mapped by the Air Force 3,000 feet wide by 5,000 feet long extending from the Clear Zone. An accident is less likely to occur in APZ I than in the Clear Zone, but a significant risk factor still exists.

Accident Potential Zone II (APZ II): A zone mapped by the Air Force 3,000 feet wide by 7,000 feet long. An accident is less likely to occur in APZ II than APZ I, but it still possesses some risk.

Air Installation Compatible Use Zone (AICUZ): An Air Force program which measures and maps noise and accident potential resulting from normal military operations. Using this data, AICUZ recommends compatible land uses within the various Compatible Use Districts identified.

Attenuation: Acoustical phenomenon whereby a reduction in sound energy is experienced between the noise source and receiver. The energy loss can be attributed to atmospheric conditions, terrain, vegetation, man-made features, and natural features.

A-weighted Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighted network. The A-weighting scale closely resembles the frequency response of human hearing, and therefore, provides a good indication of the impact of noise produced from transportation activity.

Clear Zone: An area 3,000 feet by 3,000 feet extending outward from the runway threshold. The accident potential is so high within this area that development of any kind on the land is recommended to be prohibited.

Compatible Land Use: A use of land identified in AICUZ and ICUZ as normally compatible with the aircraft and artillery noise levels or accident potential characteristics of the area in which the land use is situated.

Compatible Use Districts: A series of districts which are defined by aircraft noise exposure and accident potential near United States Air Force airfields.

C-weighted Sound Level: The sound pressure level in decibels as measured on a sound level meter using the C-weighted network. The C-weighted measures the low frequency component of a noise that can cause building and windows to shake and rattle and which is an important ingredient in a person's perception of the annoyance from blast (artillery and small arms fire) activities.

Decibel(dB): A unit for measuring the relative loudness of noise. One decibel is comparable to the weakest sound that can be heard by a person with very good hearing in an extremely quiet room.

Impulsive Noise: Noise of short duration of high intensity, abrupt onset and rapid decay, often with rapidly changing spectral composition. Impulse noise is characteristically associated with such sources as explosions, impacts and the discharge of firearms.

Installation Compatible Use Zone (ICUZ): An Army program which measures and maps noise and resulting from normal military operations. Using this data, the Army recommends compatible land uses around the installation.

Induced Consumption Spending: Changes in consumption spending resulting from government spending.

Ldn (Day-Night Average Sound Level): A measurement of aircraft noise based on the annual average daily noise levels in decibels. Ten (10) decibels is added to the level of noise occurring between 10 p.m. and 7 a.m.

Noise Level Reduction (NLR): Difference in decibels, between the noise level outside a building and the noise level inside a designated room in the building that was caused by exterior noise.

Noise Sensitive Use: Land uses whose normal daily activities are interrupted or upset by a high amount of noise. They may include but are not limited to homes, schools, professional offices, hospitals, outdoor recreation, and libraries.

Noise Zone I: A noise contour utilized by the Army. It contains an area where the day-night average sound level is 62 decibels C-weighted (dBC). This area, considered to have moderate to minimal noise exposure, is acceptable for noise sensitive land uses including housing, schools and medical facilities.

Noise Zone II: A noise contour utilized by the Army. It contains an area where the day-night average sound level is between 62 and 70 decibels C-weighted (dBC) DNL. This area is considered to have a significant noise exposure and is normally unacceptable for noise sensitive land uses.

Noise Zone III: A noise contour utilized by the Army. It contains an area where the day-night average sound level is greater than 70 decibels, C-weighted (dBC). This zone is considered an area of severe noise exposure and is unacceptable for noise sensitive land uses.

Single Noise Event: An occurrence of audible noise usually above a specified minimum noise level caused by an intrusive source such as an aircraft overflight, passing train, or ship's horn.

CHAPTER 1

WHAT IS THE JOINT LAND USE STUDY?

PROGRAM DESCRIPTION

The Joint Land Use Study (JLUS) is a collaborative planning effort involving the military installations of Fort Lewis, McChord Air Force Base and Camp Murray (Washington National Guard) and ten local governments surrounding these military installations. Its broad goal is to encourage each jurisdiction to practice compatible development and redevelopment in each affected jurisdiction that balances sustaining the local military missions with long-term community land use needs. Compatible land use means land use identified in AICUZ and ICUZ as normally consistent with the aircraft activity and artillery noise levels or accident potential characteristics of the area in which the land use is situated.

RELATIONSHIP OF AIR INSTALLATION COMPATIBLE USE ZONE STUDY (AICUZ) AND INSTALLATION COMPATIBLE USE ZONE STUDY (ICUZ) TO THE JOINT LAND USE STUDY (JLUS)

The goal of the JLUS stated above is echoed in both the Air Force's Air Installation Compatible Use Zone (AICUZ) and the Army's Installation Compatible Use Zone (ICUZ) programs. AICUZ and ICUZ are programs designed to measure and map public safety issues such as noise and accident potential resulting from normal military operations. This information is then used to recommend compatible land uses to local governments in areas likely to be impacted by air and land operations and training. Both McChord Air Force Base (1976) and Fort Lewis (1988) have issued AICUZ and ICUZ studies respectively. To encourage implementation of AICUZ recommendations, the Air Force initiated the JLUS funding program in 1985.

ELIGIBILITY

The JLUS program provides technical and financial assistance for civilian study of land use guidelines as they relate to military operations. Certain requirements are considered by the Air Force when selecting locations to be eligible for JLUS assistance. Among these requirements are the following:

- a) Demonstrated ability to work with local governments
- b) Potential for incompatible growth in areas potentially affected by the bases
- c) Base commitment to support JLUS effort
- d) Existence of state enabling legislation for planning around airfields.

Chapter 1

What is the Joint Land Use Study?

Senior Air Force installation personnel holds primary responsibility for determining eligibility and submitting their base for JLUS candidacy through their headquarters.

CONSENSUS BUILDING

An important standard to measure financing the JLUS is the ability to build a community consensus. The Air Force measures this qualification by asking that:

Each local governing body within the JLUS area must be in agreement with the need for compatible growth in communities around the airfield. If the JLUS is to have positive results, the communities must also agree to adopt those measures needed to achieve compatible growth.¹

Consensus-building is normally spearheaded by one jurisdiction designated to act as lead agency. During the eligibility study phase, Pierce County Planning and Land Services staff developed goals and objectives, proposed techniques for public involvement, established a scope of work and solicited letters of support from other affected jurisdictions. A preliminary budget framework was also formulated.

Using all available information, local commanders nominate their respective installations for the JLUS program. A select number of candidate installations are forwarded each year to the Office of Economic Adjustment (OEA) in the Office of the Secretary of Defense for final selection. Once a local lead agency is designated, the OEA assists the JLUS participants with grant application and contract management. The lead agency acts for all participating local governments and is the co-signatory (along with OEA) on the final contract.

PARTICIPANTS

The decision to include Fort Lewis (Army) and Camp Murray (Washington National Guard) with the McChord Air Force Base Joint Land Use Study was based on a common recognized need. Collectively, the three military installations form a large contiguous block straddling Pierce and Thurston Counties. Strong strategic and operational links contribute to the military installations' importance in planning. Consequently, internal boundaries between them have been largely ignored for the purpose of this study.

In addition to Pierce and Thurston Counties, the cities and towns of Tacoma, Steilacoom, DuPont, Roy, Yelm, Rainier and Lacey and the Nisqually Indian Reservation either share a border with one or more of the installations, or realize some level of impact from the military presence. Pierce County was designated as lead agency and coordinated early planning sessions. Letters of concurrence received from participating jurisdictions are included in Appendix B.

¹ Joint Land Use Study Program, "Achieving Compatible Land Use Around Air Force Installations," Department of Defense brochure.

GOAL OF THE STUDY

Consistent with the broad aims of the Joint Land Use Study concept, the McChord-Fort Lewis-Camp Murray study has the following goal:

Encourage each jurisdiction to practice compatible development and redevelopment of the areas surrounding the installations that balances military mission requirements with community needs.

A degree of certainty is sought for surrounding communities as well as for the military, in order that operations can be planned and land use regulations crafted in an environment of relative predictability.

While the focus is land use, related opportunities for increased collaboration are identified. Recommendations are offered for long-range mechanisms to facilitate cooperation on issues of mutual interest. Previous Joint Land Use Studies have concentrated on the development of land use compatibility recommendations surrounding Air Force bases. Aircraft noise and safety issues dominated other studies, and are a major component of this study.²

With the inclusion of Fort Lewis and Camp Murray, the list of land use conflicts has lengthened. For example, noise impacts from heavy artillery and light arms fire training are perceived by the public as detrimental to their health and safety. Conversely, the encroachment of residential development to the edge of Fort Lewis restricts the Army's ability to train effectively without complaints from nearby residents. This and other conflicts are examined in Chapter 4.

Limits of the JLUS in Implementing the Goal: While the JLUS recommends certain courses of action, it does not regulate nor does it immediately become part of any comprehensive plan. Each participating jurisdiction must decide which JLUS recommendations are applicable to their needs. Implementation at the discretion of the elected officials in each jurisdiction and the respective military commands will follow the issuance of the final recommendations.

BASELINE FOR STUDY

The following define the baseline for the study:

- a) Joint Land Use Study recommendations will be based on peacetime operational levels.
- b) The study is based on current population, types of military activities and military operational level, while acknowledging periodic fluctuations.

² See the Joint Land Use Studies for Williams AFB and Luke AFB in Maricopa County, Arizona, the Comprehensive Land Use Plans (CLUP) for Castle AFB, Beale AFB, McClellan AFB and Mather AFB in California and the Comprehensive Airport Land Use Plan for Travis AFB, in Solano County, California.

- c) Area-wide population growth rate will remain stable.
- d) The entity creating the problem and the entity affected by the problem are responsible to work with each other to solve the problem.
- e) Implementation will follow the issuance of the final recommendations in March 1992, at the discretion of the elected officials in each jurisdiction and respective military commands.
- f) The military encourages good relations with neighboring jurisdictions and vice versa.
- g) Federal policy prevails on any issue relating to the use of military reservation lands.
- h) There will be an ongoing competition of land uses between the national interest and local preference.
- i) The study will make recommendations that may differ from comprehensive plans, policies and regulations current at the time of study development.
- j) The military and local governments are committed to solving problems where the problems and solutions have been identified.
- k) The military and local governments are committed to avoiding problems by planning in a progressive fashion and in communicating with one another.

METHODOLOGY

The sequence of actions leading to this draft Study followed generally the proposed scope agreed to by the Office of Economic Adjustment and the participating jurisdictions. These elements are enumerated below:

1. An inventory of land use within the study area.
2. An assessment of the noise environment.
3. A land use impact analysis.
4. Noise abatement and alternatives and procedures development.
5. Abatement alternatives evaluation.
6. Identification of recommended procedures.
7. Study area compatibility recommendations.
8. Implementation strategies and roles and responsibilities.

The method used to develop the JLUS is a compilation of workshop and committee processes. Two committees were established at the outset, a Technical Review Committee (TRC) and a Citizen Review Committee (CRC). The following summary explains the participation levels of each group:

Technical Review Committee: From the outset, each participating jurisdiction and military installation committed staff time to support the Study. The role of these representatives was to provide technical expertise on the county, city or installation that they represented. Meeting approximately once per month, the Technical Committee determined study direction, environmental review, scope elements, precise land use conflicts, and formulated and agreed on draft recommendations. In addition, Committee members provided Pierce County staff with necessary information to produce a regional characterization. Committee

members were responsible for keeping their respective elected officials informed of JLUS progress.

Citizen Review Committee: The Citizen Review Committee represented a cross-section of regional interests and geography. Its primary responsibilities were to identify issues, review written documents, and take the lead role in facilitating public comment at community workshops. The Committee assisted in narrowing the scope elements, identifying specific land use conflicts, and providing alternative recommendations to resolve conflicts.

Pierce County Joint Land Use Team: As lead agency, Pierce County Department of Planning and Land Services provided staff to manage the JLUS grant, to organize the efforts of the Citizen and Technical Review Committees, to characterize scope elements within the study area, and to compose all written documentation and Study materials. The Joint Land Use Team operated out of the Current Planning Division of the Pierce County Department of Planning and Land Services. Efforts of this group were coordinated directly with personnel in the Comprehensive Planning Division, Department of Public Works (Transportation Division) and Executive Office of County Operations.

Public Participation: Residents living adjacent to the military installations, businesses in the study area and Department of Defense personnel living and working on the military installations were identified as a valuable resource in providing a broad cross-section of perceived conflicts. A public participation exercise was created to solicit ideas from these groups.

Public workshops were held in Lacey, Yelm, Lakewood, Spanaway and Fort Lewis, beginning on March 25, 1991 and concluding on April 17, 1991. Responses were sought to the following three questions:

- a) How is your community affected by having the military as a neighbor?
- b) What are the benefits your community derives from the local military presence?
- c) How would you like things to be (in an ideal world, how would the military bases and surrounding communities relate to one another)?

Workshop notification took several forms. The Citizen and Technical Committees and Pierce County staff developed a brochure for mailing to all property owners within a half mile distance from either installation boundary or the 65 Ldn³ contour (aircraft noise) for McChord Air Force Base. A total of 12,748 brochures were sent. In addition to direct mail, press releases were issued to 35 local media contacts, encompassing radio television and print (both civilian and military). Announcements were distributed and posted by Citizen Review Committee members and local organizations and were posted in high visibility locations.

³ For an explanation of measuring average day night sound levels, see Appendix G.

Chapter 1

What is the Joint Land Use Study?

The workshops were conducted as facilitated brainstorming sessions in small groups of six to eight people. With Citizen and Technical Committee members as facilitators, citizens provided responses to the three questions in a round robin fashion. All answers were documented and keyed to their geographic origin.

Total attendance at the workshop series amounted to 98 citizens. This total was augmented by 234 responses from the questionnaire that was part of the direct mail brochure.

At the conclusion of the public participation exercise, Pierce County staff grouped similar responses and wrote summary statements within each grouping. See Chapter 4 for details on how these summary statements were used in defining issues. Responses and summary statements are attached as Appendix D.

ENVIRONMENTAL REVIEW

As the participating jurisdictions formally adopt the Joint Land Use Study, an environmental review would be required as defined by Chapter 43.21C of the Revised Code of Washington (RCW). An expanded environmental checklist was prepared to analyze the effects of the JLUS. Because of the many jurisdictions, the varying possible methods of implementation and the varying degree of implementation likely, the Technical Review Committee advised that a Mitigated Determination of Nonsignificance (MDNS) should be issued. Mitigation consists of agreement between these entities that thorough environmental review will occur at the implementation stage (copies of checklist and MDNS are in Appendix C).

GROWTH MANAGEMENT ACT EFFECT ON JLUS

Comprehensive plan and land use regulation revisions required by the Growth Management Act provide a vehicle for implementing JLUS recommendations. During the 1990 and 1991 legislative sessions, the State of Washington passed two bills which collectively have been termed the Growth Management Act. The Act requires the adoption of comprehensive land use plans and development regulations by all counties with gross population of greater than 50,000 and at least a 10% growth rate in the last ten years. This requirement extends to municipalities located within those counties that meet the criteria. The deadline for completion of the comprehensive plan portion is July 1, 1993, with accompanying regulations adopted no later than one year following the comprehensive plan.

Both Pierce and Thurston Counties must plan. Consequently, each county and city jurisdiction participating in the JLUS is currently undergoing review and revision of comprehensive plans based on standards formulated by the Washington Department of Community Development. New plans based on Growth Management Act guidelines are expected to recommend changes in land use planning around the military installations. It will be the responsibility of the participating jurisdictions to ensure that JLUS recommendations are taken into account when developing their individual comprehensive plans.⁴

⁴ For additional information on the Growth Management Act and its impact on the JLUS, see Chapter 4, Section G.

CHAPTER 2

STUDY AREA PROFILE

STUDY AREA BOUNDARIES

It may be argued that nearly all of Pierce and Thurston Counties, and portions of King County, are effected by some degree by their proximity to McChord, Fort Lewis and Camp Murray. However, in order to meet the JLUS goal of encouraging compatible development, the primary study area was narrowed to those areas likely to experience the greatest effect.

A line was drawn connecting points one-half mile outward from either the installation boundaries or the 65 Ldn noise contour line (See Figure 4.6). This one-half mile width strip constitutes the area of focus for civilian JLUS issue identification, data collection and recommendations.

PHYSICAL SETTING

McChord Air Force Base, Fort Lewis and Camp Murray occupy a large contiguous block in the southern Puget Sound Basin in the State of Washington. The bulk of this land is in Pierce County with a significant portion of Fort Lewis located in northern Thurston County. Specific acreage totals for the three installations are shown below.

<u>INSTALLATION</u>	<u>ACRES</u>
Fort Lewis	86,176
McChord Air Force Base	4,601
Camp Murray	<u>228</u>
TOTAL	91,005

Surrounding the installations are a number of incorporated cities and towns and unincorporated communities (See Figure 2.1). The largest concentration of population is clustered in the northern one-third of the study area, encompassing the City of Tacoma, Town of Steilacoom and City of DuPont, and the unincorporated communities of Lakewood, Tillicum, Parkland and Spanaway. Several smaller towns flank the eastern border of Fort Lewis, including Roy, City of Yelm, and Rainier. The cities of Lacey and Olympia are located at the southernmost extent of Puget Sound, approximately six miles west of Fort Lewis. Between the Pierce and Thurston County portions of Fort Lewis along the Nisqually River is the Nisqually Indian Reservation.

On a southwest-northeast axis, the installations extend approximately 22 miles, bridging the Nisqually River northwest of Yelm. From its western border on Nisqually Reach in Puget Sound, Fort Lewis stretches over 15 miles to the southeast.

Chapter 2

Study Area Profile

The terrain ranges from a nearly level plain with isolated, well-rounded hills in Pierce County to hilly (generally less than 15 percent slope) in Thurston County. Steep bluffs fronting Puget Sound and along the Nisqually River are exceptions. Lack of significant topographic variation contributes to the region's overall suitability for military training exercises.

Most of the surface land features of the Joint Land Use Study area were formed during the recent glacial episodes. Large blocks of ice contained in the outwash deposits of the Vashon glacier melted to form large depressions, many of which are filled by groundwater lakes which are a key feature of the area.

Suitability of the soils for agriculture is limited generally to forage and trees. Most soils are excessively drained, gravelly sandy loams about two feet thick and represent unconsolidated to partially consolidated glacial deposits. The Nisqually Delta alluvial fan with associated river deposit soils spreads out just west of Fort Lewis before emptying into Puget Sound.

The Nisqually River is the primary hydrologic feature in the study area, and its watershed drains a large proportion of Fort Lewis. In the south Fort Lewis area in Thurston County, the Deschutes River watershed drains into Budd Inlet. Other major drainages include Muck Creek, Murray Creek, Clover Creek and Sequelitchew Creek. Several major freshwater bodies of water are located on or near the military installations including American Lake, Spanaway Lake, Gravelly Lake, Sequelitchew Lake, Lewis Lake, Nisqually Lake, Lake St. Clair, Patterson Lake and Offut Lake.

Strategically, the installations are ideally situated to meet current and future national defense objectives, particularly for strategic deployment. Five miles north of the northern tip of McChord AFB is the Port of Tacoma, a deep water, containerized seaport. Both rail and interstate connections link the port facilities with the military installations and points south. In addition, the Yakima Firing Center is located due east across the Cascade Range (three hours by state highway), which facilitates large scale training maneuvers in arid semi-desert conditions.

From a national perspective, the study area sits squarely in the middle of a region that consistently gains accolades for a high quality of life. In recognizing the Puget Sound Basin as a highly desirable location to live and work, national publications have cited the availability of many recreational, social and health amenities.

POPULATION

The population growth rates in Pierce County and Thurston County have been among the highest in the State of Washington for the past decade. Table 2.1 indicates the total 1991 civilian population by age. Although the growth rates have decreased, both counties are expected to experience continued population growth.

In 1991, Thurston County's population totaled 161,800. Between 1980 and 1990 Thurston County was the fifth fastest growing county in Washington with a 30.2 percent increase in

population. The average annual growth rate for Thurston County slowed to 2.7 percent from 1980 to 1990, compared to 4.9 percent from 1970 to 1980. In 1970, over one-half of the County's population resided in incorporated areas. Since 1970, development and population growth have shifted to unincorporated areas. In 1990, 64 percent of Thurston County's population resided in the unincorporated areas. From 1980 to 1990, the incorporated population grew 21 percent while unincorporated grew 37 percent.

TABLE 2.1
CIVILIAN POPULATION BY AGE (1990)⁵

Counties & Cities	0-17	18-24	25-64	65 +	Total
Pierce Co.	159,649	66,599	298,469	61,486	586,203
Tacoma	46,010	19,679	86,717	24,258	176,664
Steilacoom	1,401	661	3,127	539	5,728
DuPont	170	68	290	64	592
Roy	85	16	129	28	258
Thurston Co.	43,392	13,517	85,861	18,468	161,238
Lacey	4,994	2,065	9,219	3,051	19,279
Yelm	490	118	608	121	1,337
Rainier	351	95	474	71	991

Sources: Washington State Office of Financial Management
Thurston Regional Planning Council, The 1991 Profile

Pierce County's 1990 population totaled 586,203 making it the second most populated county in the state. Between 1980 and 1990, the County experienced a 18.3 percent increase in population which ranked it third in population gain in the state. The annual growth rate for the Pierce County has been consistent at 1.7 percent from 1970 to 1980 and from 1980 to 1990. Suburban and unincorporated areas are growing at a faster rate than the City of Tacoma. In 1970, Tacoma had almost 40 percent of the total county population in contrast to 30 percent today.

⁵Total county population includes incorporated population

TABLE 2.2
COUNTIES PRESENT AND PROJECTED GROWTH

	1980	1985	1990	1995	2000
Pierce County	485,643	524,900	586,203	613,192	656,085
Thurston County	124,264	139,500	161,800	178,946	197,563

Source: Washington State Office of Financial Management

STUDY AREA LAND USE

Historical Perspective: Development of the region has reflected shifting historical trends. Steilacoom and Fort Nisqually as frontier military and trading outposts between 1833 and mid 1860's. Later, local market centers, such as Parkland, Spanaway, Roy and Yelm, developed to support predominantly agricultural hinterlands.

The growing role of Tacoma as the region's dominant city in the late nineteenth century, coupled with rail links to Steilacoom and Spanaway, precipitated suburban growth in the Lakewood and South Tacoma areas. Somewhat independently, the establishment of an explosives manufacturing plant north of the Nisqually Delta prompted the development of the town of DuPont. Steady growth throughout the twentieth century has provided in-fill between many of these communities to the point where the historic market centers are now indistinguishable as distinct entities.

Surrounding Land Use: There is a wide range of land uses surrounding the more than 91,000 acres occupied by the military. This diversity can be characterized by a north to south trend from higher to lower-intensity land uses that corresponds to population density. Specific land use compatibility issues are discussed in Chapter 4.

The Northern Perimeter: In the areas north and northeast of the military lands (encompassing Steilacoom, Lakewood, South Tacoma, Parkland and Spanaway), the prevailing land use is single-family residential.

Several historic and recent commercial pockets and corridors serve this area, the most notable of these are Lakewood Colonial Center and Lakewood Mall, South Tacoma Way in Lakewood from Ponders northward, the Interstate 5 service corridor from South 84th Street to South 38th Street (including the Tacoma Mall) and Pacific Avenue from SR-512 south to the Roy Y.

Discourage residential development and other land uses that assemble concentrations of people in airport approach zones or in areas of highest noise around airports. (Facilities and Services II, Policy #22)

Preserve air facilities and services by promoting compatibility with surrounding land uses, coordinating ground transportation connections and by discouraging encroachment of incompatible development. (Facilities and Services II, Policy #23)

Pierce County - Parkland/Spanaway Comprehensive Plan: The Clear Zone lies within the Parkland/Spanaway Urban Environment. The environment is intended to accommodate high-density high-intensity land uses. The environment does, however, acknowledge the necessity of safety considerations under the McChord AFB runway threshold. The Urban Environments goal for development north of McChord AFB is as follows:

Light industrial activities which have convenient transportation access, low personnel per acre intensity and minimal environmental impacts upon surrounding areas should be encouraged immediately north of McChord Air Force Base.

Although the Urban Environment includes the following uses: light manufacturing and warehousing; commercial facilities; offices; community facilities, utilities and institutions; residential, including single-family, multifamily, mobile homes and mobile home parks; cultural, park and recreational, and wildlife habitat; land use applications such as rezones, conditional use permits and subdivisions, must meet the low-personnel, transportation, and low environmental impact test before being authorized.

Pierce County - Parkland/Spanaway Zoning: The policies of the Parkland/Spanaway Plan are implemented using pyramidal zone classifications. Pyramidal zoning allows all or part of the uses in other less intensive classifications as well as a list of new uses. For instance, the C-3 (Heavy Commercial) zone allows not only heavy commercial uses but also allows the majority of everything in the residential and less intensive commercial zones as well. So the number of uses increases in a pyramidal fashion with each successive zone. manufacturing and industrial uses permit all commercial uses but not residential uses. The following zone classifications lie within the McChord AFB Clear Zone:

1. RMH, Multi-Family Residence High-Density allows for maximum population density within the Parkland/Spanaway Plan. This classification is intended to provide higher density areas adjacent to community and commercial areas. Single-family minimum lot size is 7,200 square feet.
2. C-3, Heavy Commercial intended to provide for non-retail commercial and semi-industrial land uses. It also permits multi-family and single-family residences, mobile home parks, churches, public schools, retail business, offices, and recreational facilities. Single-family minimum lot size is 7,200 square feet.

3. M-1, Light Manufacturing intended to provide for low nuisance and low hazard industrial activities. It also permits commercial uses, churches, public schools, retail business, offices, and recreational facilities.
4. M-2, Heavy Manufacturing intended for higher intensity industrial activities and prohibits residential and institutional uses. The classification also permits commercial uses, churches, public schools, retail business, offices and recreational facilities.

ANALYSIS

The majority of the land uses and the majority of zoning within the Clear Zone is incompatible with AICUZ recommendations. Of particular concern are a mobile home park, single-family residences, and the professional office space. Even the light and heavy manufacturing uses are incompatible due to the potential for local concentrations of daytime workers.

Although Pierce County policy directs that land use in the Clear Zone be compatible, current zoning provides for an increasing number of incompatible land uses in the Clear Zone. Vacant parcels within the RMH zone permits multi-family development. Roughly 12 additional multi-family housing units could be constructed in the RMH area. The 14 acres of heavy commercial zoning has 720 square feet undeveloped. Since multifamily residences are permitted additional apartments or mobile homes could be constructed there as well. Approximately 18 acres of undeveloped property, zoned Light and Heavy Manufacturing, may allow incompatible uses such as professional offices, retail stores, recreation facilities and other businesses which may concentrate people. The likelihood of development increases as the supply of other property appropriately zoned and in close proximity to Interstate 5 and urban centers is diminished.

The majority of the developed land in the Clear Zone supports industrial activities, approximately seventeen acres. (See Table 4.5)

TABLE 4.5
EXISTING PRIVATELY OWNED LAND USE IN ACRES - CLEAR ZONE

Land Use	Acres
Undeveloped	20
Single Family Residential	5.5
Commercial	8
Industrial	17

Source: Pierce Planning and Land Services

The largest percentage, twenty-five percent (25%) of privately owned property in the Clear Zone is zoned Light Manufacturing (M-1). (See Table 4.6) The remaining property in the Clear Zone is Residential Multi-Family High-Density (RMH), Heavy Commercial (C3), Heavy Commercial Planned Development (C3-PDD), and Heavy Manufacturing (M-2).

TABLE 4.6
ZONING CLASSIFICATION - CLEAR ZONE

Zoning Classification	Total Acres
Residential Multi-Family High-Density (RMH)	5
Heavy Commercial Planned Development District (C3-PDD)	1
Heavy Commercial (C3)	14
Light Manufacturing (M-1)	25
Heavy Manufacturing (M-2)	5

Source: Pierce County Planning and Land Services

ALTERNATIVES

- a. Local governments adopt land use restrictions in Clear Zone.
- b. Federal government (Department of Defense) purchase remaining private property in Clear Zone.
- c. Authority to approve any development or redevelopment permits in Clear Zone is shared equally between Pierce County and the Air Force.
- d. Pierce County allows no further development within the Clear Zone (requires purchase).
- e. Pierce County purchases land for dedication as open space.

RECOMMENDATIONS

1. The Department of Defense should purchase in fee simple all property in the McChord AFB Clear Zone, supported actively by local government.
2. If fee simple purchase is not possible, the military should purchase the development rights in the Clear Zone.

3. Until acquisition of the Clear Zone occurs, Pierce County should restrict development and other land uses that assemble concentrations of people in the McChord AFB Clear Zone as follows:
 - a. Prohibit new residential development.
 - b. Encourage the relocation of existing residents to locations where land use is compatible with Joint Land Use Study recommendations.
 - c. Permit industrial, manufacturing, and warehouse uses with fewer than an average of 25 people per hour/per acre in a 24-hour period and noise reduction construction in public areas which meets the United States Department of Housing and Urban Development (HUD) standards.
 - d. Allow low-intensity uses such as mining; cemeteries; agriculture, except livestock; open-space; and utilities.
4. Until acquisition of the Clear Zone occurs, Pierce County should prohibit the following land uses:
 - a. Any use which involves release of airborne substances, such as steam, dust, and smoke which interfere with aircraft operations.
 - b. Any use which emits light, direct or indirect (reflections), which interfere with pilot's vision.
 - c. Any use which emits electrical currents which may interfere with communication systems or navigational equipment.
 - d. Any use which attracts birds or waterfowl [i.e., sanitary landfills, feeding stations, and the growth of certain vegetation].
 - e. Any use which would have structures within 10 feet of aircraft approach-departure and/or transitional surfaces.
5. For proposed new development in the Clear Zone, environmental checklists should be referred to the McChord AFB Commander for comment prior to a threshold determination.
6. Puget Power and other utilities should work to eliminate all above-ground transmission lines within the Clear Zone.
7. Pierce County should support open-space tax exemptions for qualified properties in the Clear Zone.

Issue #2: Incompatible land uses in the Accident Potential Zones

DESCRIPTION

The probability of aircraft accidents in Accident Potential Zones I and II (APZ I, APZ II) lead to the Department of Housing and Urban Development (HUD), the Environmental Protection Agency (EPA), and the United States Air Force (USAF) to endorse the compatible use guidelines within the McChord AFB Air Installation Compatibility Use Zone

Study (AICUZ). The guidelines recommend restricting certain types of land uses. Restricted uses include those which concentrate people in a living or working environment, involve operations with hazardous characteristics that are likely to interfere with the operation of an aircraft. The recommended restrictions are intended to protect people on the ground and the pilots flying the aircraft.

To limit public exposure to possible physical injury, people should not be concentrated where the incidence of aircraft accidents is high. While the number of aircraft accidents are not high, a single accident can be a catastrophe to a community. Allowing a concentration of people increases the number of residents who may be injured or killed in an aircraft accident. Nor should the crew of an aircraft be exposed to the additional risks when certain businesses are permitted under landing and departure tracks.

Currently Pierce County and the City of Tacoma allow uses which are identified by the compatibility use guidelines as incompatible in Accident Potential Zones I and II. Businesses which are labor intensive and other land uses which concentrate people are allowed to develop in APZ I and II. First, allowing certain businesses which pose a hazard to aircraft operations increase the possibility of an aircraft accident. These hazards include uses which 1) release any substance into the air which would impair visibility or interfere with the operation of an aircraft, 2) produce light emissions which would interfere with pilot vision, 3) produce electrical emissions which would interfere with aircraft communication systems or navigational equipment, 4) attract birds or water fowl.

Accident Potential Zone I: Seven and eight-tenths percent (7.8%) of all Air Force aircraft accidents have occurred in Accident Potential Zone I (APZ I). This 5,000 feet long by 3,000 feet wide rectangle extends from the northern edge of the Clear Zone (south of the Interstate 5 and State Route 512 interchange) north to South 93rd Street. It is located entirely in unincorporated Pierce County. Currently approximately 1,666 people reside within this zone.

TABLE 4.7
1990 POPULATION - ACCIDENT POTENTIAL ZONE I

APZ I (CUD 3)	718
APZ I (CUD 4)	948
Total Population APZ I	1,666

Source: 1990 Census

Accident Potential Zone II: Five percent (5.0%) of all Air Force aircraft accidents have occurred in Accident Potential Zone II (APZ II). This 8,000 feet long by 3,000 feet wide rectangle extends from the northern end of APZ I to South 72nd Street. Approximately 40% of this zone is located in the City of Tacoma with the remainder in Pierce County.

Accident Potential Zone II (APZ II) can be characterized generally as a residential area, encompassing the northeastern corner of Lakewood in Pierce County and the Arlington neighborhood of Tacoma.

TABLE 4.8
1990 POPULATION - ACCIDENT POTENTIAL ZONE II

APZ II (CUD 9)	239
APZ II (CUD 10)	2,748
APZ II (CUD 11)	339
Total Population APZ II	3,326

Source: 1990 Census

CURRENT POLICIES AND REGULATIONS

Air Force - McChord AFB Air Installation Compatible Use Zone Study (AICUZ): The recommendations for land uses in Accident Potential Zone I (APZ I) and Accident Potential Zone II (APZ II) combine accident potential with noise effects and refer to Compatible Use Districts (CUDs). A guide to land uses considered compatible within the CUDs is reproduced in Table 4.2. Guidelines in the McChord AICUZ Study are recommendations to be considered along with local economic and community characteristics.

Several generalizations may be drawn about incompatible land uses in Accident Potential Zones.

1. All residential and transient lodging uses are considered incompatible in APZ I. Recommendations suggest limiting residential development to single-family residences with one dwelling unit per one acre in APZ II.
2. Commercial or industrial uses are incompatible in both APZ I and II which
1) stockpile combustible or explosive materials, 2) release substance into the air which impair visibility or interfere with the operation of an aircraft, 3) produce light emissions which interfere with pilot vision, 4) produce electrical emission which interfere with aircraft communication systems or navigation, or 5) attract birds or waterfowl which compound the risk of life.
3. Commercial, industrial, or public assembly uses which attract concentrations of people (such as restaurants, labor intensive manufacturing and auditoriums) increase the number of people placed at risk are incompatible in both APZ I and APZ II.

City of Tacoma - Comprehensive Plans: Neither the Generalized Land Use Plan nor the South Tacoma Plan for the City of Tacoma contain policies regarding land use compatibility

and aircraft accident potential in APZ II. The South Tacoma Plan provides for the continuation of developing single-family residential with multi-family residential and small office uses designated along South 72nd Street.

City of Tacoma - Zoning: The current zoning classifications in APZ II include One-Family Dwelling District (R2), Low-Density Multi-Family Dwelling District (R4L), and Commercial (C2). These classifications allow population densities which are incompatible with the McChord AICUZ Compatible Use Guidelines. The R2 classification permits a residential density of one unit per 5,000 square feet (8.7 units per acre). The R4L classification permits residential multi-family density of 6,000 square feet for the first four units, with an additional 1,500 square feet for each unit in excess of four (26 units per acre). The C2 classification permits a residential density of 6,000 feet per two-family or multi-family dwellings uses that concentrate people on site (12.5 units per acre).

Pierce County - Interim Growth Management Policies: The Pierce County Interim Growth Management Policies provide the following guidance within its "Facilities and Service II - Circulation Policies" relative to compatible use around airports:

Strictly observe Federal Aviation Administration (FAA) and military aviation Air Installation Compatible Use Zone (AICUZ) standards for development in airport areas, including height limitations, noise mitigation and land use considerations. (Facilities and Services II, Policy #21)

Discourage residential development and other land uses that assemble concentrations of people in airport approach zones or in areas of highest noise around airports. (Facilities and Services II, Policy #22)

Preserve air facilities and services by promoting compatibility with surrounding land uses, coordinating ground transportation connections and by discouraging encroachment of incompatible development. (Facilities and Services II, Policy #23)

Pierce County - Parkland/Spanaway Comprehensive Plan: The Parkland/Spanaway Comprehensive Plan designates the area east of Interstate 5 in Accident Potential Zone I (APZ I) as an Urban Environment. The Urban Environment is intended to provide a high intensity land use area which allows the highest basic density and intensity of development. However, the Plan recognizes the presence of McChord's flight operations as follows:

Facilities which provide warehousing, light industry and other similar uses are encouraged to locate in the Urban Environment adjacent and north of McChord Air Force Base. The area's excellent access to major transportation links and present land use pattern warrants the continuation of the present uses. Currently, future residential development is limited by the negative environmental effects created by McChord Air Force Base. Life safety considerations under the runway threshold and the prohibition of FHA-VA housing financing require a low person per acre density in this area. (Parkland-Spanaway Comprehensive Plan, Page 43)

Pierce County - Parkland/Spanaway Zoning: The current zoning classifications in APZ I includes Residential Multi-Family (RM), Residential Multi-Family High-Density (RMH), Light Manufacturing (M1), and Heavy Manufacturing (M2). All of these zoning classifications allow uses which may concentrate people.

1. Manufacturing classification allows uses which manage material with hazardous characteristics.
2. Residential classifications permit densities which are inconsistent with the compatible use guidelines in the McChord AICUZ.
3. RM classification allows for multi-family residential development at a density 16 units per acre.
4. RMH classification allows for multi-family residential development at a density 19 units per acre.

Pierce County - Lakewood Community Plan: Proposed land uses for the portion of the Lakewood Community Plan in Accident Potential Zones I and II range from low- and high-density residential to commercial and industrial land uses. In delineating proposed uses in the plan, the primary determinant was to recognize existing land uses. Most of APZ I is proposed for commercial or industrial uses, with a band of low-density residential between South 93rd Street and South 96th Street. The area north of South 93rd Street to the Tacoma city limits (corresponding to APZ II) is slated for low- and high-density residential uses flanked by commercial to the west and industrial to the east.

Because of the concurrent development of the Lakewood Community Plan and the Joint Land Use Study, implementation of JLUS recommendations is advocated as follows:

Pierce County should investigate the recommendations of the ICUZ and AICUZ studies for incorporation into the County's Comprehensive Land Use Plan. (Natural and Cultural Resources Element - Natural Resources/Environment-Noise, Objective B, Policy 2)

Future updates of the Lakewood Community Plan should incorporate any adopted county-wide policies that stem from the ICUZ and AICUZ reports and recommendations from the Joint Land Use Plan. (Natural and Cultural Resources Element - Natural Resources/Environment-Noise, Objective B, Policy 3)

Specific regulations will not be developed to implement the Lakewood Community Plan. Instead of changing Lakewood zoning pending the update of the Pierce County Comprehensive Plan, interim zoning regulations have been adopted.

Pierce County - Lakewood Interim Zoning: Until July 1, 1994, or adoption of land use regulations to implement the Comprehensive Plan update, Lakewood area development is governed by Lakewood Interim Zoning (Ordinance # 90-1015S). The previous zoning classifications are combined into broader categories that collapse all single family residential zoning classifications into an Interim Single Family (ISF-10) zone, all multi-family zoning classifications into an Interim Multi-Family (IMF) zone, and all industrial, manufacturing and commercial zoning classifications into an Interim Business (IB) zone.

These residential classifications permit densities and the manufacturing classifications permit uses which are not consistent with the compatible use guidelines in the McChord AICUZ.

1. ISF-10 classification permits a single-family residential density of one unit per 10,000 square feet.
2. IMF classification permits a multi-family residential density requires 7,200 square feet for the first dwelling unit and 3,600 square feet per additional dwelling units.
3. IB classification allows manufacturing and commercial uses which may concentrate people and/or manage material which has hazardous characteristics.

ANALYSIS

When compared against the McChord Air Installation Compatible Use Zone Study (AICUZ) land use recommendations, a large proportion of APZ I and APZ II are occupied by incompatible land uses. The existing comprehensive plan policies and zoning regulations provide for an increase in the number of incompatible uses in years to come. With the exception of low-density single family residences in APZ II, the single family residences, multi-family residences, and businesses which attract concentration of citizen, are not appropriate for either Accident Potential Zone. Existing nonconforming uses might be allowed to continue, but zoning should preclude new or replacement development that is not consistent with AICUZ recommendations.

Existing Land Use - APZ I and APZ II: Acreage of existing land uses in APZ I is displayed in Table 4.9

TABLE 4.9
EXISTING LAND USE IN ACRES - ACCIDENT POTENTIAL ZONE I

LAND USE TYPE	CUD 3	CUD 4	TOTAL	% of TOTAL
Single-Family Residential	25	15	40	11
Multi-Family Residential	10	5	15	4
Commercial	35	25	60	17
Industrial	35	10	45	13
Undeveloped	74	40	114	33
Mineral Extraction	50	0	50	15

Source: Pierce County Planning and Land Services, 1991 Field Inventory

As a reflection of the zoning, the predominant land use in APZ II is residential. Single family residential uses account for approximately 246 acres. Table 4.10 shows the existing land use in APZ II.

TABLE 4.10
EXISTING LAND USE IN ACRES - ACCIDENT POTENTIAL ZONE II

LAND USE TYPE	CUD 9	CUD 10	CUD 11	TOTAL	% of TOTAL
Single-Family Residential	45	181	20	246	51
Multi-Family Residential	5	55	0	60	12
Commercial	0	45	0	45	9
Vacant	0	62	15	77	16
Public	0	15	1	9	2

Source: Pierce County Planning and Land Services, 1991 Field Inventory
City of Tacoma, 1990 Inventory

Existing Zoning - APZ I: A mixture of zoning classifications are present in APZ I. Land use classifications in this zone include single family residential, multi-family residential, commercial, and industrial classifications. The Parkland/Spanaway Zoning Regulations are developed as pyramidal zone classifications. Pyramidal zoning allows all or part of the uses in other less intensive classifications as well as a list of new uses in successive zones.

Approximately 194 acres of the property is zoned commercial or industrial. East of the freeway, in the Parkland/Spanaway Plan Area, approximately 139 acres are zoned Heavy and Light Manufacturing (M1, M2). West of the freeway, in the Lakewood Plan Area, approximately 70 acres are zoned Interim Business. Existing zoning in APZ I is displayed in Table 4.11.

TABLE 4.11
ZONING CLASSIFICATION - ACCIDENT POTENTIAL ZONE I

Zoning Classification	Acres
Interim Single Family-10 (ISF)	36.6
Interim Multi-Family (IMF)	53.5
Residential Multi-Family (RM)	8.7
Residential Multi-Family High-Density (RMH)	26.2
Interim Business (IB)	68.3
Light Manufacturing (M-1)	96.4
Heavy Manufacturing (M-2)	32.7

Source: Pierce County Planning and Land Services, 1991 Inventory

Existing Zoning - APZ II: The current zoning classifications in APZ II can be generally characterized as predominantly residential. Approximately 302 acres of this area is zoned single-family residential and 135 acres zoned multi-family residential. Table 4.12 lists the zones and associate acreage.

TABLE 4.12
ZONING CLASSIFICATION - ACCIDENT POTENTIAL ZONE II

Zoning Classification	Acres
Interim Single Family (ISF-10)	150
Single Family (R2)	152
Interim Multi-Family (IMF)	120
Low-Density Multi-Family (R4L)	14
Interim Business (IB)	32
Neighbor Commercial (C1)	5
Community Commercial (C2)	9

Source: Pierce County Planning and Land Services, 1991 Inventory

Development Potential: Potential housing units for the residentially zoned vacant property within APZ I and APZ II are identified in Table 4.13 and Table 4.14. The number of potential housing units were estimated by dividing the total acreage for each zone by the minimum lot area for the type of residential use in the specific zones.

TABLE 4.13
APZ I - RESIDENTIAL DEVELOPMENT POTENTIAL ON VACANT LANDS²

	Total Acres in APZ I	Vacant Acres in APZ I	Residential Capacity in APZ I
Pierce County			
Interim Single Family	40	1.6	6 homes
Single Family (Parkland/Spanaway)	-	-	-
Interim Multi-Family	25	7.0	81 one bedroom units
Multi-Family (Parkland/Spanaway)	54	-	-

Source: Pierce County Planning and Land Services, 1991 Field Inventory

²The acreage used for these calculations are estimates.

TABLE 4.14
APZ II - RESIDENTIAL DEVELOPMENT POTENTIAL ON VACANT LANDS³

	Total Acres in APZ II	Vacant Acres in APZ II	Residential Capacity in APZ II
City of Tacoma			
Single-Family	185	28.2	245 homes
Multi-Family	13	10.5	301 one bedroom units
Pierce County			
Interim Single Family	168	4.0	17 homes
Single Family	-	-	-
Interim Multi-Family	85	4.7	55 one bedroom units

Source: Pierce County Planning and Land Services, 1991 Field Inventory

The estimated acreage of vacant property zoned non-residential within APZ I and APZ II is shown in Table 4.15. Pierce County and the City of Tacoma do not establish minimum lot areas for commercial or manufacturing uses. As a result it is not possible to calculate the potential number of manufacturing or industrial uses in the two zones. However, the potential acreage which could be developed into commercial and manufacturing uses has been estimated. A multiplier of .85 is used, corresponding to the average percentage of buildable property after right-of-ways have been dedicated.

TABLE 4.15
NON-RESIDENTIAL ZONED VACANT LANDS⁴

	Total Acres in APZ I	Vacant Acres in APZ I	Total Acres in APZ II	Vacant Acres in APZ II
South Tacoma Light Commercial (C1)	-	-	3	.7
Lakewood Interim Business (IB)	87	18	27	4.4
Parkland/Spanaway Light Manufacturing (M1)	55	-	-	-
Heavy Manufacturing (M2)	36	27	-	-

Source: Pierce County Planning and Land Services, 1991 Field Inventory
City of Tacoma, 1990 Inventory

³The acreage used for these calculations are estimates.

⁴The acreage used in these calculations are estimates.

The Air Force supports the development of APZ I and APZ II with compatible commercial and industrial uses. Compatible uses include operations which are not labor intensive, produce light or smoke, and/or store hazardous materials. An example of a compatible development is warehouses for nonexplosive materials.

Business groups, including the Pierce County/Tacoma Chamber of Commerce, have shown support for the Joint Land Use Study. Continuing support and involvement by the business community during its adoption and implementation process will enhance the success of the study. While the most effective method to reduce or prevent more incompatible use is through land use regulations, other avenues are also available. Industrial atlases can indicate that property lies in an Accident Potential Zone and identify preferred compatible land uses consistent with the Joint Land Use Study recommendations. Chambers of Commerce can provide information on compatible land uses in the Accident Potential Zones to people inquiring about suitable locations for new businesses. Real estate agents can identify properties in the Accident Potential Zones in multiple listings and provide clients with information materials on what the Accident Potential Zones mean.

ALTERNATIVES

- a. Reach full agreement on future land uses in the Accident Potential Zones that balances public safety with economic need.
- b. Prohibit additional incompatible land uses to develop in these zones.
- c. Rezone APZ I and APZ II to promote non-residential uses and encourage compatible uses.
- d. Limit new residential construction to single-family on minimum one acre lots.
- e. Require real estate agents, mortgage lenders, and rental agents to inform clients of accident potential and have clients sign statements acknowledging that this information has been relayed.
- f. Encourage military to take lead in redevelopment of APZs.
- g. Encourage business community to lead the way on a voluntary program to remove land use conflicts.
- h. Establish lines of communication between military and civilian leaders in overcoming land use incompatibilities.
- i. Maintain a hazard zone overlay whereby development or redevelopment is required to be more compatible with AICUZ recommendations.
- j. Do not take steps to address the issue.

RECOMMENDATIONS

1. Pierce County should develop regulations that minimize incompatible uses in Accident Potential Zone I as follows:
 - a. Prohibit any new residential development.
 - b. Prohibit any new use which involves release of airborne substances, such as steam, dust, and smoke which interfere with aircraft operations.
 - c. Prohibit any new use which emits light, direct or indirect (reflections), which interfere with pilot's vision.
 - d. Prohibit any new use which emits electrical currents which may interfere with communication systems or navigational equipment.
 - e. Prohibit any new use which attracts birds or waterfowl [i.e., sanitary landfills, feeding stations, and the growth of certain vegetation].
 - f. Prohibit any new use which results in a concentration of people, more than an average of twenty-five (25) people per hour/per acre in a 24-hour period.
2. Pierce County and the City of Tacoma should coordinate land use regulations developed to minimize land use incompatibilities in Accident Potential Zone II (APZ II) as follows:
 - a. Prohibit any new use which involves release of airborne substances, such as steam, dust, and smoke which interfere with aircraft operations.
 - b. Prohibit any new use which emits light, direct or indirect (reflections), which interfere with pilots vision.
 - c. Prohibit any new use which emits electrical currents which may interfere with communication systems or navigational equipment.
 - d. Prohibit any new use which attracts birds or waterfowl [i.e., sanitary landfills, feeding stations, and the growth of certain vegetation].
 - e. Prohibit any new use which results in a concentration of people, more than an average of twenty-five (25) people per hour/per acre in a 24-hour period.
 - f. Prohibit any new development or redevelopment which results in an increase in density or intensity of current development.
3. For development proposals in Accident Potential Zones I & II, environmental checklists should be referred to the McChord AFB Commander for comment prior to a threshold determination.
4. New churches, schools, libraries, and other similar buildings that concentrate people should not be located in Accident Potential Zones I or II.
5. Pierce County and the City of Tacoma should adopt Aircraft Accident Potential Areas as identified in the McChord AFB Air Installation Compatible Use Zone Study (AICUZ).

6. Upon adoption of accident potential zones, landlords, housing referral agencies, real estate agents, sellers, and lenders should include disclosure statements in rental agreements and purchase agreements.
7. Local governments should encourage the business community to lead the way on a voluntary program to remove land use conflicts in the Accident Potential Zones.
8. The military installations should update the Fort Lewis Installation Compatible Use Zone Study (ICUZ) and the McChord AFB Air Installation Compatible Use Zone Study (AICUZ) as missions change or land use compatibility standards change, but not less than every three (3) years in order to allow local jurisdictions to implement the Joint Land Use Study recommendations.

SECTION C - AIRCRAFT NOISE

Most complaints concerning airports relate to noise generated during normal aircraft operations. Aircraft noise can influence human behavior and activities in many ways and affect psychological and physiological health. While generalizations may be formulated about reactions to prolonged noise exposure, individual's tolerance to noise vary widely.

In an effort to minimize complaints from people affected by aircraft operations and address health and welfare concerns, civilian and military airport planners have developed land use compatibility guidelines based on levels of noise exposure. These are intended to assist land use regulatory agencies in zoning and planning issues. The Air Force Air Installation Compatible Use Zone (AICUZ) and the Army Installation Compatible Use Zone (ICUZ) studies were developed to provide such guidelines for McChord AFB and Gray Army Airfield, Fort Lewis respectively. Contained in these documents are land use compatibility recommendations for the jurisdictions participating in the JLUS.

Aircraft noise does not exist in a vacuum. Even if aircraft overflights were eliminated from an area, residents would still be affected by noise from other sources. This might include truck and automobile traffic, diesel engines and rail cars on local railways, or noise associated with urban land uses, such as industry and lawn mowers. The area of concern at the north end of McChord Field is affected by non-aircraft noise sources. It is beyond the scope of the JLUS to address cumulative noise impacts of ambient (background) and aircraft noise except to note that the noise levels of a single event is not increased by the amount of background noise.

This section focuses on aircraft noise and its effects on civilian communities and includes a brief overview of aircraft noise and how it is measured and what techniques have been used to minimize the effects of noise on people. Recommendations are intended to achieve compatible development and redevelopment of areas affected by severe aircraft noise in the least restrictive manner possible.

MEASURING NOISE

Land use planning around airports is linked to the generation of noise contours using the Day-Night Average Sound Level (Ldn) system. The Ldn approach describes the total noise environment rather than measuring the decibel levels of individual noise events. This is a national uniform standard adopted by the Environmental Protection Agency (EPA), Department of Housing and Urban Development (HUD), the Federal Aviation Administration (FAA) and the Department of Defense (DOD).

Computation of Ldn begins with a single-event energy descriptor and adds corrections for the number of events and the time of day. Since the primary noise impact relates to residential areas, nighttime events are considered more annoying than daytime events and are weighted 10 decibels accordingly. Ldn values are calculated from a logarithmic average of single-event noise levels combined with flight tracks, fleet mix, and times of flights.

Joint Land Use Study noise contours represent the cumulative effect of all baseline aircraft activities. Contours are drawn around airfields to demarcate areas experiencing noise levels

corresponding to a given range of noise intensity. Contours define the location of noise levels on and around the airfields at values of 65, 70, 75, 80, and 85 Ldn. The values of the noise contours can be interpreted to represent different levels of community annoyance, as shown on Figure 4.5. There is general agreement in both civilian and military compatible land use planning that areas outside the 65 Ldn contour are exposed to safe levels of noise exposure, but not necessarily less annoyance.

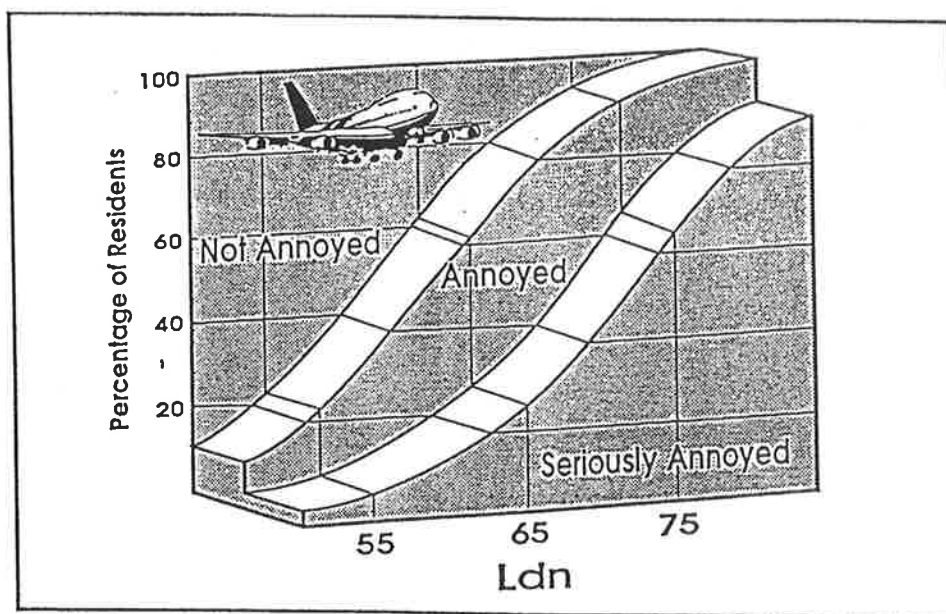


Figure 4.5

ANNOYANCE CAUSED BY AIRCRAFT
NOISE IN RESIDENTIAL AREAS

The Ldn noise measurement method is based on the average of single noise events. Single noise events, within noise contour lines, will exceed the average decibel associated with contour lines. Single noise events of 47.5 to 72.5 decibels are comparable to the range of speech. The "average professional office" experiences noise events of 50 decibels. While noise levels of 80 decibels can be found in any downtown area when some construction activity is occurring.

EXISTING NOISE CONTOURS

McChord Air Force Base: The noise contours reflect only the noise environment resulting from military aircraft operations. To produce the Ldn noise contours for McChord AFB, data was collected describing flight tracks, flight profiles, power settings, flight track and profile utilization and ground run-up information by type of aircraft and engine. This information was entered into a computer modelling program called Noisemap¹, verified by local Air Force staff and corrected to local conditions. A set of Ldn noise contours was plotted by computer which reflect current operational frequency and fleet mix (please refer

¹ For a detailed discussion of Ldn contour generation using Noisemap, refer to Appendix G.

to Figure 4.6). The noise contours extend north of McChord airfield into Lakewood and Tacoma. The noise contours south of McChord airfield lie entirely within the installation boundaries.

Fort Lewis: The Army's Installation Compatible Use Zone Study (ICUZ) program is similar in goals and methodology to the Air Force's Air Installation Compatible Use Zone Study (AICUZ). However, it differs in study focus because its noise sources are primarily artillery, demolition and rotary-wing aircraft (helicopters). Fixed-wing aircraft at Gray Army Airfield account for only 10% to 15% of average daily operations. Because of the low numbers of fixed-wing missions and the orientation of the airfield in the middle Fort Lewis property, noise contours of 65 Ldn or greater fall do not extend onto civilian land. (See Figure 4.8.)

Camp Murray: Washington and Oregon Air National Guard activities are conducted at McChord Field and Fort Lewis and are part of Ldn noise contour generation for those airfields.

NOISE ATTENUATION

Exterior noise can be isolated and reduced in living and working environments. The process of selectively decreasing the sound entering occupied structures from the outside is called noise attenuation.

There are three basic ways to provide the necessary noise attenuation:

1. Using barriers or berms
2. Site design
3. Acoustical construction

Of these, only the first two provide improvement in the exterior noise environment. Acoustical construction standards affect only interior levels.

Barrier Noise Reduction: When no obstacles are present between a source and adjoining areas, sound travels by a direct path from the source to the receiver. Introduction of a barrier (or buffer) in this direct path redistributes the sound energy into several different paths: a diffracted path, over the top or to the side of the barrier; a transmitted path, through the barrier; and a reflected path, directed away from the receiver. Barriers or buffers are designed to minimize noise traveling on a direct path by maximizing the redistribution of noise by diffraction, transmission and reflectance.

Acoustical Site Design: The arrangement of buildings on a site can be used to minimize noise impacts. If incompatible land uses already exist, or if a noise sensitive activity is planned, acoustical site planning often provides a technique for reducing noise impacts. The following are several design techniques which can shield noise sensitive uses from the source:

1. Increase the distance between the noise source and receiver.
2. Locate noise compatible land uses between the source and receiver.

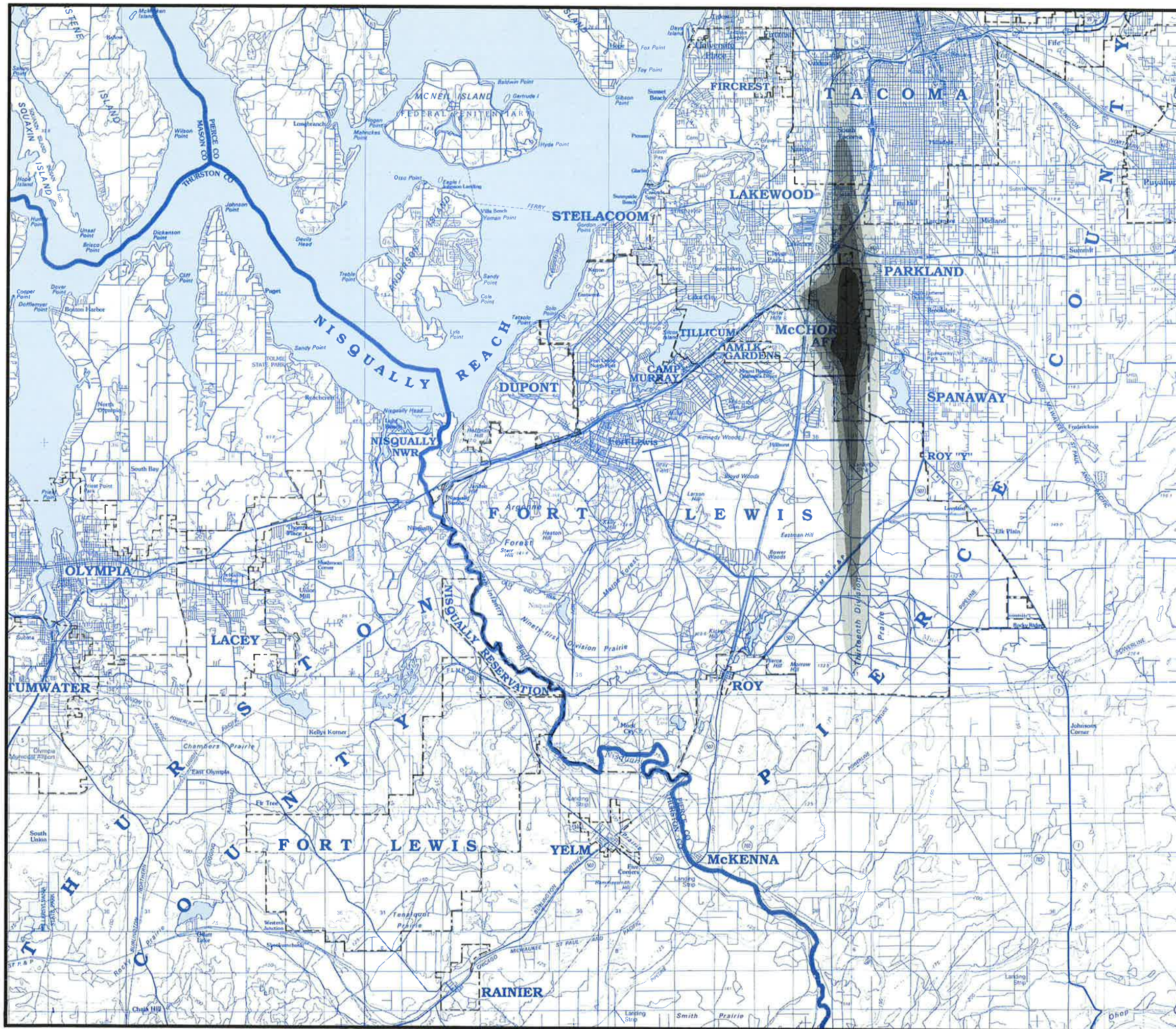
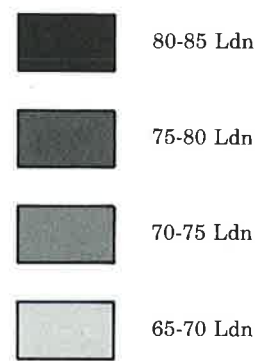
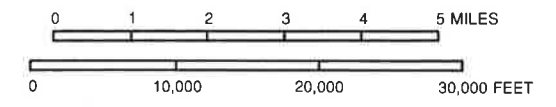


Figure 4.6
McCHORD AFB LDN NOISE CONTOURS



Base Map compiled from USGS 1:100,000 Scale Map Series
November 1991



Pierce County Department of Planning and Land Services



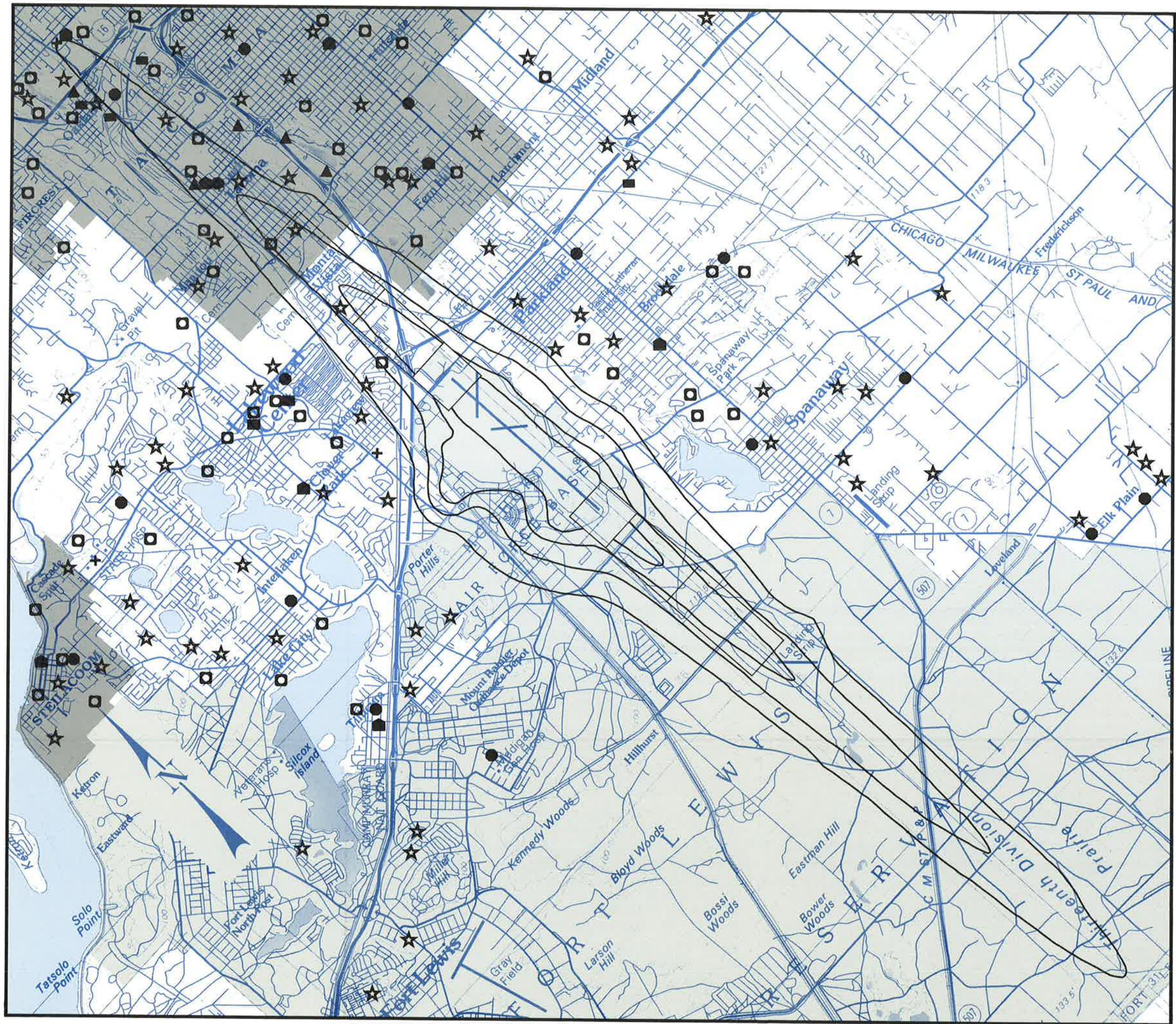
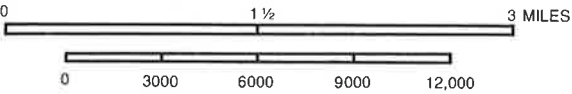


Figure 4.7
PUBLIC FACILITIES

- Fire Station
- Government Building
- ✚ Hospital
- Library
- ◻ Park/Community Center
- ★ School
- ▲ Social Service

Base Map compiled from USGS 1:100,000 Scale Map Series
November 1991



Pierce County Department of Planning and Land Services



3. Locate barrier-type buildings parallel to the noise source.
4. Orient the uses away from the noise source.

Acoustical Construction: To reduce interior noise levels, construction techniques may be employed to intercept noise as it passes through walls, floors, windows, ceilings and doors of a building. To compare the insulation performance of alternative constructions, the Sound Transmission Class (STC) is used as a measure of ability to reduce sound. The STC is equal to the number of decibels a sound is reduced as it passes through a material. This classification system is the official rating endorsed by the American Society of Testing and Measurement and is used in many building codes.

Target (STC) ratings for materials are provided to meet the noise reduction goals. Additional guidance is offered to confirm sufficient noise level reduction (NLR) has been accomplished in new or retrofit construction. Both of these documents are found in Appendix I.

Issue #1: *Noise sensitive land uses are encouraged to develop in areas of very high aircraft noise.*

DESCRIPTION

Aircraft employing a northern departure or a northern approach at McChord AFB produce noise contours that extend off of the installation into the City of Tacoma, Pierce County and the communities of Spanaway and Parkland. Various types of land uses fall within the noise contours. The function and characteristic of each land use influences the consequence of the aircraft noise. Compatible Use Guidelines developed by various federal agencies in the McChord Air Installation Compatible Use Zone Study (AICUZ) identify land uses which should not be located within certain Ldn noise contours. Incompatible use are noise sensitive uses where the type of construction does not reduce interior noise levels to HUD standards.

Although the McChord AICUZ study recommends restricting certain types of land uses within the 65 Ldn noise contours, local government regulations do not coincide. The zoning classifications designated to these areas permit out right noise sensitive uses such as schools, churches and day care facilities.

TABLE 4.16
ESTIMATED 1990 POPULATION - LDN NOISE CONTOURS

75 - 80 Ldn	268
70 - 75 Ldn	6,259
65 - 70 Ldn	16,490
TOTAL POPULATION IN NOISE CONTOURS	23,478

Source: 1990 Census

CURRENT POLICIES AND REGULATIONS

Air Force - McChord Air Installation Compatible Use Zone Study (AICUZ): Although the Air Force recognizes that local conditions may require residential uses within the 75 - 80 Ldn noise contour, it is strongly discouraged, except for hotels and motels.

The absence of viable alternative development options should be determined and an evaluation indicating that a demonstrated community need for residential use would not be met if development were prohibited in these CUDs should be conducted prior to approval.

Residential uses within the 70 - 75 Ldn noise contour and 65 - 70 Ldn noise contour are acceptable with a noise level reduction of 30 decibels (dB). Residential uses in the 65-70 Ldn noise contour need a noise level reduction of decibels. An additional recommendation is made for site planning and design standards to reduce interior noise levels.

Industrial, manufacturing, and commercial land uses are acceptable below the 80 Ldn noise contour, providing, noise reduction is incorporated into building construction through the building envelope (outside walls, windows, ceilings, roof, and vents) where the public is received, office areas, or where there is a need to keep noise levels low. Recommended noise reduction levels are as follows:

75 - 80 Ldn noise contour	35 decibels noise reduction
70 - 75 Ldn noise contour	30 decibels noise reduction
65 - 70 Ldn noise contour	25 decibels noise reduction

Public and quasi-public services are generally acceptable with a noise reduction of 25 decibels within the 65 - 70 Ldn noise contour and 30 decibels of noise reduction in the 70 - 75 noise contour. Within the 75 - 80 Ldn noise contour, government services with noise attenuation of 30 decibels and cemeteries are the only public/quasi- public services recommended.

Outdoor recreation facilities are not acceptable within the 75 - 80 Ldn noise contour except for golf courses, riding stables, and water-based recreational areas such as swimming, and water skiing. Outdoor recreation is acceptable within the 70 - 75 Ldn noise contour, except for nature exhibits, spectator sports (arenas), auditoriums and outdoor amphitheaters. Outdoor recreation facilities are acceptable within the 65 - 70 Ldn noise contour except for outdoor amphitheaters.

Table 4.1 contains the AICUZ compatibility guidelines with detailed information on the acceptability of land uses within each Ldn noise contour.

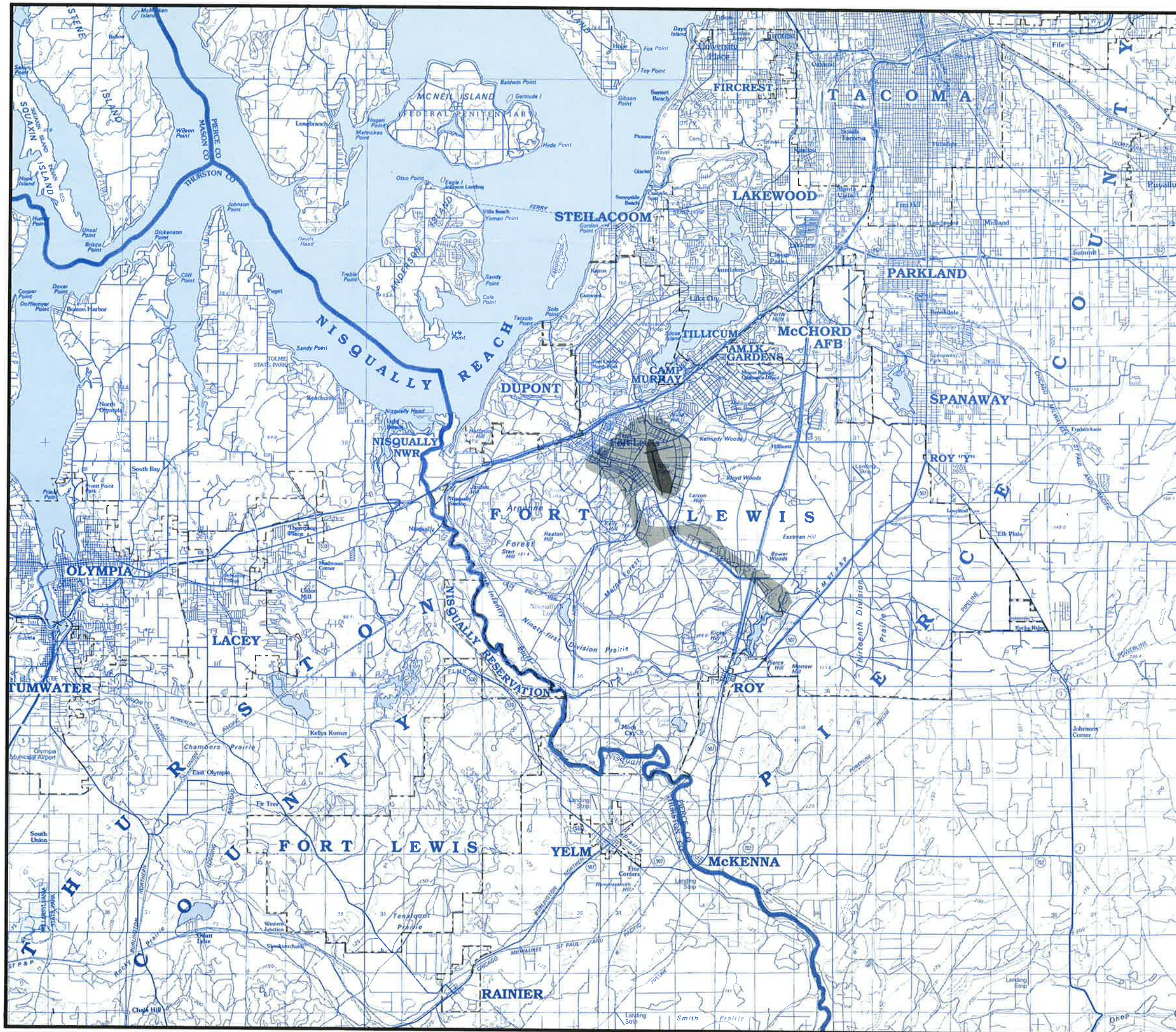



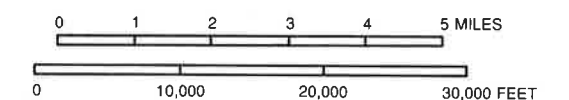


Figure 4.8

GRAY ARMY AIRFIELD NOISE CONTOURS

-  Noise Zone 3 (NZ3)
-  Noise Zone 2 (NZ2)
-  Noise Zone 1 (NZ1)

Base Map compiled from USGS 1:100,000 Scale Map Series
November 1991



Pierce County Department of Planning and Land Services



JOINT LAND USE STUDY

Department of Housing and Urban Development (HUD): The Department of Housing and Urban Development has established minimum national standards applicable to HUD programs. The standards are intended to protect citizens against excessive noise in their communities and places of residence. Table 4.17 explains the noise exposure standard used by HUD during the review process of federally assisted development projects. Federal assistance may be withheld for residential development on sites which have, or are projected to have, unacceptable noise levels.

TABLE 4.17
HUD NOISE EXPOSURE STANDARDS

REVIEW STANDARD	dB(A) LEVEL	HUD CONDITIONS
Unacceptable	Exceeds 80 dB(A) 60 minutes per 24 hrs. Exceeds 75 dB(A) 8 hours per 24 hours	Exceptions are strongly discouraged and require an environmental impact statement and HUD approval.
Discretionary-Normally Unacceptable	Exceeds 65 dB(A) 8 hours per 24 hours Loud repetitive sounds on site	Approvals require noise reduction measures, HUD approval and an environmental impact statement.
Discretionary-Normally Acceptable	Does not exceed 65 dB(A) more than 8 hours per 24 hours	None
Acceptable	Does not exceed 45 dB(A) more than 30 minutes per 24 hours	None

Source: The Noise Guidebook, HUD, pg. 13.

Included in the "discretionary - normally unacceptable" (65 - 75 Ldn) zone are Compatible Use Districts 4, 10, 11, 12 and 13 developed for McChord. Considered "unacceptable" (above 75 Ldn) by HUD standards are CUDs 3, 7 and 9.

HUDs regulations do not contain standards for interior noise levels. However, a goal of 45 Ldn is set forth and attenuation requirements are geared to achieving that level. These attenuation standards are complemented by AICUZ recommendations for single-family residential construction in the 65 Ldn to 75 Ldn zones.

State of Washington - Administrative Code: Chapter 173-63 of the Washington Administrative Code (WAC) exempts "sounds originating from aircraft in flight at airports which are directly related to flight operations" from meeting state maximum permissible environmental noise levels. This exemption is echoed in the Pierce County Code, Chapter 8.72.100.

City of Tacoma - City Wide: The City's Generalized Land Use Plan, adopted in 1980, recognizes that "a sizable portion of the city is affected by aircraft noise generated by McChord Air Force Base or by vehicular noise." The Policies listed below are intended to meet the City's Growth and Development Goals:

1. *Encourage the use of buffer areas and/or noise absorbing barriers between sources of noise and residential areas or other noise sensitive land uses.*

- 2. Promote the use of construction techniques, building siting and other means that reduce the level of internal and external noise, particularly in high noise areas.*
- 3. Discourage development in noise impacted areas that will significantly increase noise levels by either a direct contribution or by removing an existing natural feature that acts as a noise absorbing barrier.*
- 4. Discourage the development of noise sensitive land uses within or near high noise areas.*

Pierce County - Interim Growth Management Policies: Under Facilities and Services II (Air Transport, Noise Mitigation) in the Pierce County Interim Growth Management Policies (May 9, 1991), the following policies apply to aircraft noise and land use compatibility:

- 21. Strictly observe Federal Aviation Administration (FAA) and military aviation Air Installation Compatible Use Zone (AICUZ) standards for development in airport areas, including height limitations, noise mitigation and land use considerations.*
- 22. Discourage residential development and other land uses that assemble concentrations of people in airport approach zones or in areas of highest noise around airports.*
- 23. Preserve air facilities and services by promoting compatibility with surrounding land uses, coordinating ground transportation connections and by discouraging encroachment of incompatible development.*

Pierce County - Transportation Plan: Supports appropriate accommodation to the military component of Pierce County's air transportation system. In "Compatibility of Transportation with Land Use" the following policies apply to aircraft activities at McChord AFB:

- 43. Pierce County supports the preservation of air navigation resources and facilities in the county by:*
 - Providing for compatibility with surrounding land uses;*
 - Preventing encroachment by development that negatively affects airport operations.*
- 44. Pierce County supports the development of an 'airport overlay' zoning designation and map that:*
 - Is compatible with Federal Aviation Administration standards;*
 - Includes all public and military airports . . .;*
 - Is coordinated with all affected parties;*
 - Is incorporated into Pierce County zoning regulations for areas designated as compatible use districts' in the McChord Air Force Base Air Installation Compatible Use Zone documents.*

45. *Pierce County supports the use of the following methods, in addition to 'airport overlay zones,' to provide for compatibility between air facilities and surrounding land uses:*

- *Coordinated review process for proposed land developments located within an airport overlay zone;*
- *Clear identification, available to the public, of all airports, private landing strips, seaplane bases, and airport zones on county maps and records, including (but not limited to) zoning maps and assessor's maps and records.*

Pierce County - Lakewood Community Plan: The Lakewood Community Plan directly addresses the issue of land use compatibility with surrounding military installations. Within the Natural and Cultural Resources Element (Natural Resources/Environment - Noise), Objective B and Policies 2 and 3 provide guidance:

Objective B: Pierce County should support joint land use planning efforts with both McChord Air Force Base and Fort Lewis to strive to limit and reduce noise issues surrounding those installations.

Policy 2. Pierce County should investigate the recommendations of the ICUZ and AICUZ studies for incorporation into the County's Comprehensive Land Use Plan.

Policy 3. Future updates of the Lakewood Community Plan should incorporate any adopted county-wide policies that stem from the ICUZ and AICUZ reports and recommendations from the Joint Land Use Plan.

Specific regulations will not be developed to implement the lakewood Community Plan. Instead of changing Lakewood zoning pending the update of the Pierce County Comprehensive Plan, interim zoning regulations have been adopted.

Pierce County - Lakewood Interim Zoning: Until July 1, 1994, or adoption of land use regulations to implement the Comprehensive Plan update, Lakewood area development is governed by Lakewood Interim Zoning (Ordinance # 90-1015). The previous zoning classifications are combined into broader categories that collapse all single family residential zoning classifications into one category, all multi-family zoning classifications into a second, and all industrial, manufacturing and commercial zoning classifications into a third category.

The current zoning classifications present within the 65 Ldn noise contours include Interim Single-Family (ISF-10), Interim Multi-Family (IMF), and Interim Business (IB). Each of these classifications permit noise sensitive uses. The ISF-10 classification permits public and private schools, churches, and day nurseries. The vacant and undeveloped IB classification maintains the zone classification under the Pierce County Zoning Code that exists prior to the Interim Regulations. Due to the pyramidal structure of the Pierce County Code churches, schools, day nurseries, hospitals, and libraries are permitted in commercial and manufacturing zoning classifications.

Pierce County - Parkland/Spanaway Comprehensive Plan: The Parkland/Spanaway Comprehensive Plan divides the planning area into environmental districts with accompanying policy guidance for development within each environment. The bulk of the land inside the 65 Ldn contour is either Urban (directly north of McChord Field) or Rural Estates (east of McChord to Spanaway Lake). There is some Suburban Extension and Suburban to the northeast of the base.

Both Urban and Rural Estates environment districts acknowledge impacts from McChord operations. Designated as a high intensity land use area, the Urban Environment addresses environmental noise as follows:

Future residential development is limited by the negative environmental effects created by McChord Air Force Base. Life safety considerations under the runway threshold and the prohibition of FHA-VA housing financing require a low person per acre density in this area.

The Rural Estates Environment abuts McChord's eastern boundary from South 119th Street to South 176th Street. This District was established to maintain a large lot, large home estate environment, with the following goal:

To provide a rural estate living environment and protect the public safety and welfare adjacent to McChord Air Force Base.

Two policies for single-family residential development emphasize the proximity to McChord.

H.200 All residential units should be soundproofed to meet or exceed minimum FHA-VA or equivalent standards.

H.210 Single-family density shall not be greater than one dwelling unit per acre.

Pierce County - Parkland/Spanaway Zoning: The current zoning classification within the 65 Ldn noise contour includes Residential 1 Acre (RE 1 acre), Residential Multi-Family (RM), Residential Multi-Family High-Density (RMH), Light Manufacturing (M1), and Heavy Manufacturing (M2). All of these classifications permit noise sensitive uses. The RE1 classification permits churches and schools. The RM classification permits churches, day nurseries, hospitals, and libraries. The RMH, M1 and M2 classifications permit churches, schools, day nurseries, hospitals, libraries, and professional offices.

State of Washington - Building Code: Standard construction in accordance with the State Building Code (because of energy loss standards) reduces noise transmissions through the building envelope by approximately 30 decibels. Buildings constructed since 1980 will have lower interior noise levels, on average, than older buildings.

ANALYSIS

The conflict between the existing and allowed land uses and the compatibility guidelines in the McChord Air Installation Compatible Use Zone Study is not as evident as other conflicts in the JLUS. The compatible use guidelines in the McChord AICUZ recommends allowing numerous types of land uses, providing noise attenuation methods to bring the interior noise level between 45 and 50 dB. Currently, only dwellings which are financed through the Federal Housing Administration (FHA) are required to attenuate interior noise to the recommended level.

The City of Des Moines and King County have adopted noise reduction standards through their building codes. These standards have been establish to meet the required interior noise levels suggested by HUD for noise contours above a 65 Ldn. As a means of accomplishing this, Sound Transmission Class (STC) is used. The STC is used as a measure of a materials's ability to reduce sound. It takes into account the material's influence of different frequencies on sound transmission.

Table 4.18 indicates the number of housing units within the 65 Ldn noise contour. Because of the age of the dwellings, some homes do not meet the noise attenuation levels within the compatible use guidelines.

TABLE 4.18
ESTIMATE OF OFF-SITE RESIDENTS
AND OCCUPIED HOUSING UNITS EXISTING WITHIN Ldn ZONES

Ldn Zone (db)	Number of Residents	Number of Occupied Housing Units
65-70	17,807	7,752
70-75	9,349	3,902
75-80	0	1,109

Source: Environmental Assessment of the Realignment of Units at McChord Air Force Base, Washington. Department of the Air Force, February 1990.

The Ldn noise values at 12 noise sensitive community locations around McChord AFB range from 60 to 77 dB, as tabulated in Table 4.19. Noise sensitive community locations are residential areas, schools, and hospitals exposed to significant aircraft noise. Nine (9) of the 12 locations are exposed to Ldn noise levels greater than 65 dB. Students at schools identified are subject to interrupted instruction due to aircraft noise. Elementary school children during recess periods and other school students with outdoor activities are exposed to higher levels of aircraft noise.

TABLE 4.19
BASELINE Ldn NOISE LEVELS AT 12 OFF-SITE
COMMUNITY LOCATIONS NEAR MCCHORD AFB

Location	Description	Ldn (dB)
1	Tyce Park Elementary School	60
2	Southgate Elementary School	67
3	Residential Area No. 1	71
4	Residential Area No. 2	77
5	Oakwood Elementary School	74
6	Arlington Elementary School	73
7	Gray Middle School and Edison High School	69
8	Madison Elementary School	67
9	Humana Hospital	54
10	Baker Junior High School	59
11	Sales Elementary School	71
12	Keithley Middle School and Washington High School	68

Source: Environmental Assessment of the Realignment of Units at McChord Air Force Base, Washington.
Department of the Air Force, February 1990.

Although noise reduction through the Building Code brings the majority of incompatible uses into agreement with the compatible use guidelines in the McChord AICUZ, land uses within the 75 - 80 Ldn noise contour are subject to stricter standards. As shown in Table 4.1, numerous housing units, which include single family, multi-family, duplexes and mobile homes, as well as two public service dwelling are incompatible.

The extent of incompatible uses and allowable uses permitted through the zoning classifications suggest local governments have not reviewed the recommendations in the McChord AFB AICUZ study before adopting land use provisions. There is strong policy support for the recommendations, however there is limited regulations in place at this time for backing up the policies.

ALTERNATIVES

- a. Adopt construction standards to meet attenuation recommendations of AICUZ.
- b. Construct and test sound-absorbing barriers where proven effective.
- c. Create buffer zones from noise by using transfer of development rights, or zoning, or combination.

- d. Military can construct and plant barriers east and west of runway to absorb sound.
- e. Local governments should take the lead on identifying the most effective locations of noise barriers.
- f. Local governments and military should provide money and assist in redevelopment to meet stricter noise reduction standards.
- g. Require new civilian developments to maintain a noise reduction.
- h. Evaluate flight patterns through joint military-civilian task force.
- i. Extend McChord runway south to cause less noise impact in north.
- j. Publish flight patterns periodically in newspaper.
- k. Overlay noise contours on real estate maps for county and cities.
- l. Install signs in neighborhoods about noise, such as "entering aircraft/artillery noise area."
- m. Explore technology improvement in quieter engines, planes.
- n. Notify buyers/renters of noise levels.
- o. Military can provide information to the public on how to insulate their home for effective attenuation.
- p. Develop incentive program (government grants, low interest loans) for renovating to reduce interior noise levels.
- q. Modify building code to address noise abatement (following HUD standards).
- r. Alter zoning to restrict noise sensitive uses in affected areas.
- s. Adopt and enforce noise control standards for all new construction and reconstruction.
- t. Send AICUZ, HUD standards to architects.
- u. Focus on development that does not attract concentrations of people.
- v. Require site plans that address noise attenuation through vegetative buffers, berms, and topography.
- w. Sponsor design contests to provide best noise reduction in individual buildings.

- x. Provide incentives to locate new development outside of noisy areas.

RECOMMENDATIONS

1. Pierce County and the City of Tacoma should adopt the area within the 65 Ldn noise contour shown in the McChord AFB Air Installation Compatible Use Zone Study (AICUZ) as "aircraft noise sensitive" areas in local Environmental Regulations. Aircraft noise sensitive areas should be updated when new noise contours are identified in amendments to AICUZ.
2. Pierce County and the City of Tacoma should coordinate land use regulations developed for the Noise Sensitive Areas.
3. Pierce County and the City of Tacoma should insure that Building Codes reduce aircraft noise transmissions through the building envelope to meet the United States Department of Housing and Urban Development (HUD) standards.
4. Upon adoption of "noise sensitive" areas, landlords, housing referral agencies, real estate agents, sellers, and lenders should include disclosure statements in rental agreements and purchase agreements for properties in "noise sensitive" areas.
5. Policies and regulations for land use actions within the 65 Ldn noise contour should be reviewed for consistency with the McChord AFB Air Installation Compatible Use Zone Study (AICUZ) and the Fort Lewis Installation Compatible Use Zone Study (ICUZ) recommended guidelines.
6. Pierce County and the City of Tacoma should explore obtaining federal funding for aircraft noise reduction when remodeling buildings within the 65 Ldn noise contour, consistent with the Department of Housing and Urban Development (HUD) standards.
7. All affected parties should be notified when 65 Ldn noise contours are revised.
8. Pierce County should adopt regulations in the 75-80 Ldn noise contour as follows:
 - a. Permit no new residential development.
 - b. Permit no day care facilities, schools or other facilities which incorporate outside activities.
 - c. Permit low intensity uses such as golf courses.
 - d. Permit manufacturing; cultural facilities such as auditoriums, public meeting facilities, theaters; and medical facilities when the building envelope reduces aircraft noise transmissions to the Department of Housing and Urban Development (HUD) standards.

9. The military should evaluate construction of sound barriers and construct where found as effective sound management techniques.
10. The military should continue to monitor and evaluate flight patterns to reduce land use incompatibility.
11. Local governments should provide information to the public on how to achieve aircraft noise reduction when remodeling buildings.
12. The military should continue to employ technological advancements in quieter aircraft.
13. The military and local governments should investigate integrating noise attenuation with existing housing assistance programs within the 65 Ldn aircraft noise contour.
14. The Department of Defense should periodically measure actual aircraft noise levels at McChord AFB and Gray Army Airfield at Fort Lewis, recalibrate noise models to reflect actual conditions, and reconfigure aircraft noise contours in the McChord AFB Air Installation Compatible Use Zone Study (AICUZ) and the Fort Lewis Installation Compatible Use Zone Study (ICUZ) based on the findings.
15. Aircraft noise should be measured near Pacemaker Airstrip in eastern Fort Lewis with findings and recommendations included in future updates of the Fort Lewis Installation Compatible Use Zone Study (ICUZ).

Issue #2: Helicopter noise affects residents and animals.

DESCRIPTION

The training needs of the military installation require army helicopters to fly over civilian property. airspace designated for artillery firing causes the Installation to permit helicopter operations over civilian property. Eighty-five to ninety (85-90%) of aircraft operations at Fort Lewis are helicopters.

Military helicopters operating over civilian property can be heard by residents even when they cannot be seen. This is a result of helicopter propellers pushing air and noise ahead of its position, better known as the Doppler Effect. A problem both during the day and night, the noise level interferes with verbal communication, awakens people from sleep, and often disturbs animals causing them to run and damage themselves and property.

CURRENT POLICIES AND REGULATIONS

Fort Lewis conducts all helicopter missions in accordance with Federal Aviation Administration (FAA) procedures and requirements. Army helicopters are permitted to fly

Chapter 4

Aircraft Noise

anywhere that comparable civilian aircraft are allowed to fly. Minimum flight level over urban areas is at or higher than 2,000 feet above the ground, while a minimum flight level over rural areas is at 500 feet. The pilot judges the type of environment being flown over.

In addition to required altitude levels, the FAA maintains restricted airspace. Restricted airspace cannot be entered. Violations of this airspace committed by either civilian or military pilots can result in sanctions. As a general FAA requirement, aircraft are not to cause hazards to any people or property.

General flight patterns are imposed at all airfields to control air traffic and avoid accidents. The Fort Lewis Air Traffic Area is an extremely large area designed to accommodate normal missions flown by units attached to the Fort. The Air Traffic Area is the airspace within a horizontal radius of five statute miles from the geographical center of the airfield, extending from the surface up to, but not including, an altitude of 3,000 feet above the airfield elevation. Unless authorized or required by Air Traffic Control, no person may operate an aircraft within an airport traffic area except for the purpose of land at, or taking off from an airport within that area. Flight patterns apply to a five-mile radius around Gray Army Airfield. Most helicopter missions are flown outside of the five-mile radius. Outside this five-mile radius, the flight pattern depends on whether an aircraft is flying according to visual or instrument flight rules.

Outside of airspace controlled by an airfield, military aircraft operations following visual flight rules do not have to conform to a particular pattern, except those imposed by FAA regulations and military "avoidance areas". When flying according to instrument flight rules aircraft must conform to a course and elevation assigned by the regional airspace manager in Seattle. Normally military helicopters fly according to visual flight rules.

Army policy is to extend every effort to minimize the effect of aircraft operations on local residents. As a consequence, Fort Lewis monitors civilian helicopter noise complaints and development patterns to evaluate the location of "avoidance areas". An "avoidance area" is airspace the Army has concluded should not be entered in routine training. Usually it is airspace above urbanized civilian development. However, it should be noted, flying through these designated areas will not necessarily result in disciplinary actions.

ANALYSIS

Current Army policy related to avoidance areas and limited information about the amount of disturbance to residents lead to difficulty in assessing the extent of helicopter noise effects. The absence of helicopter flight patterns also inhibit a Ldn noise study for helicopters stationed at Fort Lewis.

In 1988, when the most recent ICUZ study was completed for Fort Lewis, there were up to 200 aircraft flying between 300 and 400 missions daily. The recent inactivation of the 9th Motorized Infantry Division and the current force structure at Fort Lewis has reduced the number of helicopters stationed at the Fort to 25 helicopters. However, approximately 150 additional helicopters are anticipated to be located at Fort Lewis when the 7th Infantry Division transfer is completed. Combined with current active Army and National Guard

aircraft levels, the new total is expected to increase to between 160 and 180 helicopters. These figures are subject to change because the Department of Defense is continually reviewing and modifying troop assignments.

The citizen complaint log maintained by the Fort Lewis Public Affairs Office identifies only four helicopter noise complaints from January 1 through September 15, 1991. Two complaints came from Yelm, one from Tenino and one from Tillicum. The Yelm and Tenino area is adjacent to the Merrill, El Guethar, and Darby drop zones.

Except for Tillicum, the areas where the citizens complained are dominated by very low intensity mixed uses. Livestock grazing on open and closed range lands are also common east of the Fort in both counties. Perhaps Army's avoidance policy is working for highly developed areas because the public comment on this issue originated from people living in predominantly rural areas or newly developed areas.

ALTERNATIVES

- a. Military should work more closely with cattle and dairy farmers to lessen effect on their livestock.
- b. Adjust helicopter flight paths away from newly developing areas.
- c. Public should be informed at point of purchase or lease of affected properties.
- d. A notification and education program should be implemented to inform residents of necessary training activities.
- e. Minimum height restrictions should be enforced over all areas.
- f. The Military explore new technology for helicopter noise reduction.

RECOMMENDATIONS

1. The military installations should continue to monitor areas sensitive to helicopter noise and modify corresponding avoidance areas and required flight altitudes.
2. The military installations should continue to regularly brief their pilots and monitor corresponding avoidance areas and required flight altitudes.
3. Local governments should encourage the military to explore new technologies to reduce helicopter noise emissions.
4. The military should increase buffer areas during night operations by both height and horizontal measurements.

5. The military should modify their definition of night time operations to replace the beginning time of 10 p.m. with "7 p.m. or End of Evening Nautical Twilight (EENT), whichever comes later".
6. Local governments adjacent to the military installations should regularly advise citizens of helicopter activity in the area.

Issue #3: *Touch-and-go landings, ground run-ups and nighttime flying are major causes of irritation with aircraft noise.*

DESCRIPTION

In addition to approach and departure aircraft operations, standard training and maintenance procedures are also factored into Ldn baseline contour generation. Training flights, ground run-ups (running engine to full power on the runway for maintenance checks), and nighttime flying (generally considered to be between 10:00 p.m and 7:00 a.m.) all contribute to the total noise environment.

Aircraft normally fly a closed pattern for training purposes which are designed to permit the maximum takeoff, approach and landing practice in the least amount of time. The pattern is a rectangular path from takeoff back to landing. The landing may be either touch and go (a landing followed by an immediate takeoff), a full stop or a low approach (the aircraft is aligned with the runway but does not touch down before executing a transition to the takeoff phase). All but one of the closed patterns used at McChord AFB are flown on the east side of the base over the Parkland and Spanaway areas. One pattern flown on the west flies over military property. In 1990, 65% of flight operations were performed in closed patterns.

Ground run-up at McChord Field insures proper maintenance and testing of aircraft generate a significantly high noise to warrant individual Ldn noise contour generation by the Air Force. The result of noise measurement conducted in 1990 is shown in Figure 4.10. The 65 Ldn contour does not extend beyond the base boundaries.

Ground run-up operations at Gray Army Airfield do not pose a risk to the off-base population.

CURRENT POLICIES AND REGULATIONS

Air Force - McChord AFB: McChord AFB has a policy of continuous evaluation of aircraft operations to insure that noise levels are minimized. Specific measures used to minimize noise generated by training flights, ground run-ups and nighttime flying are as follows:

No training or practice flights of assigned aircraft are normally permitted between 11:00 p.m. and 6:00 a.m.;

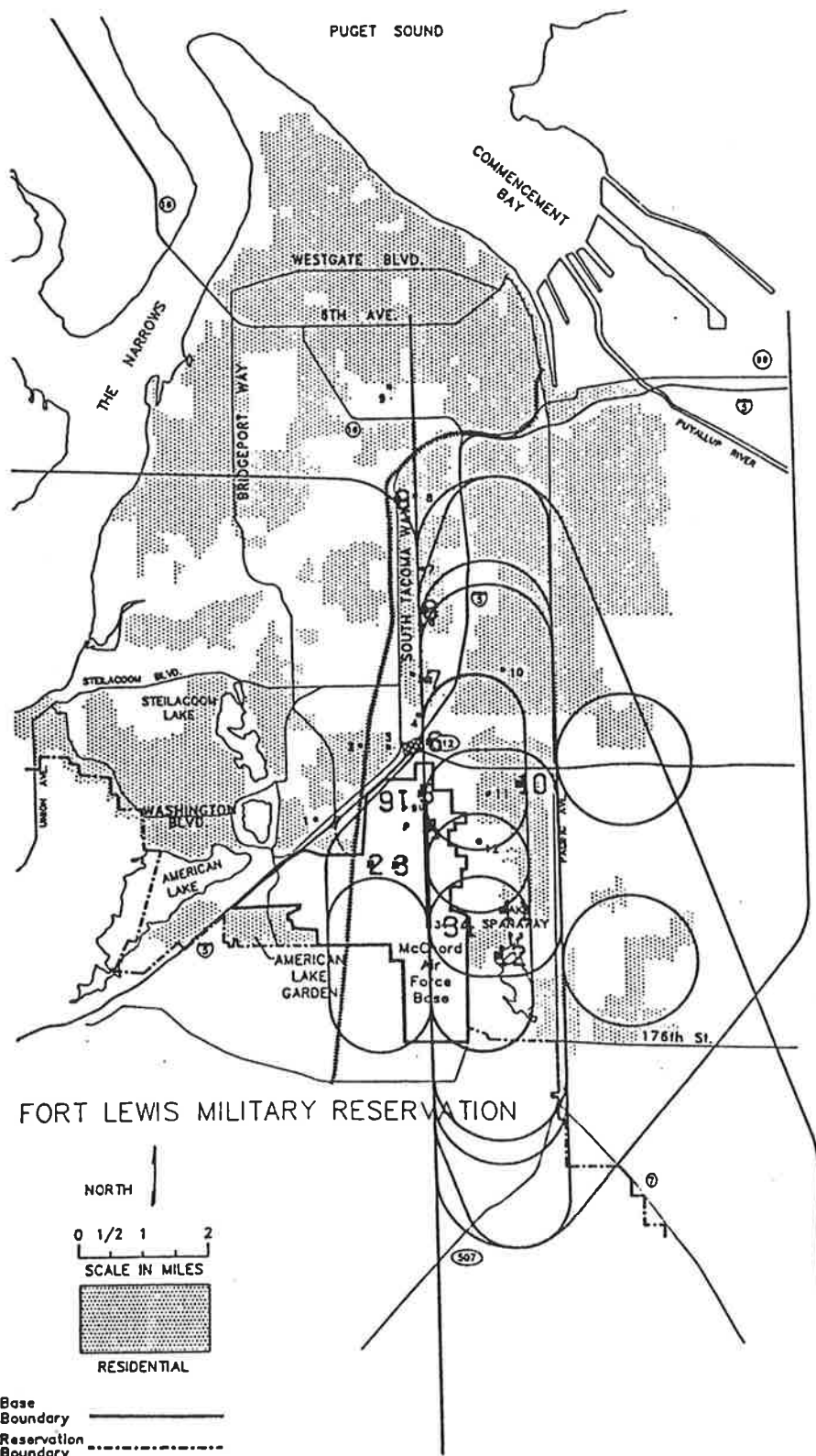


Figure 4.9 Ground-Plane Projections of McChord AFB
 Flight Path for All Operations after
 Realignment of Norton AFB Assets

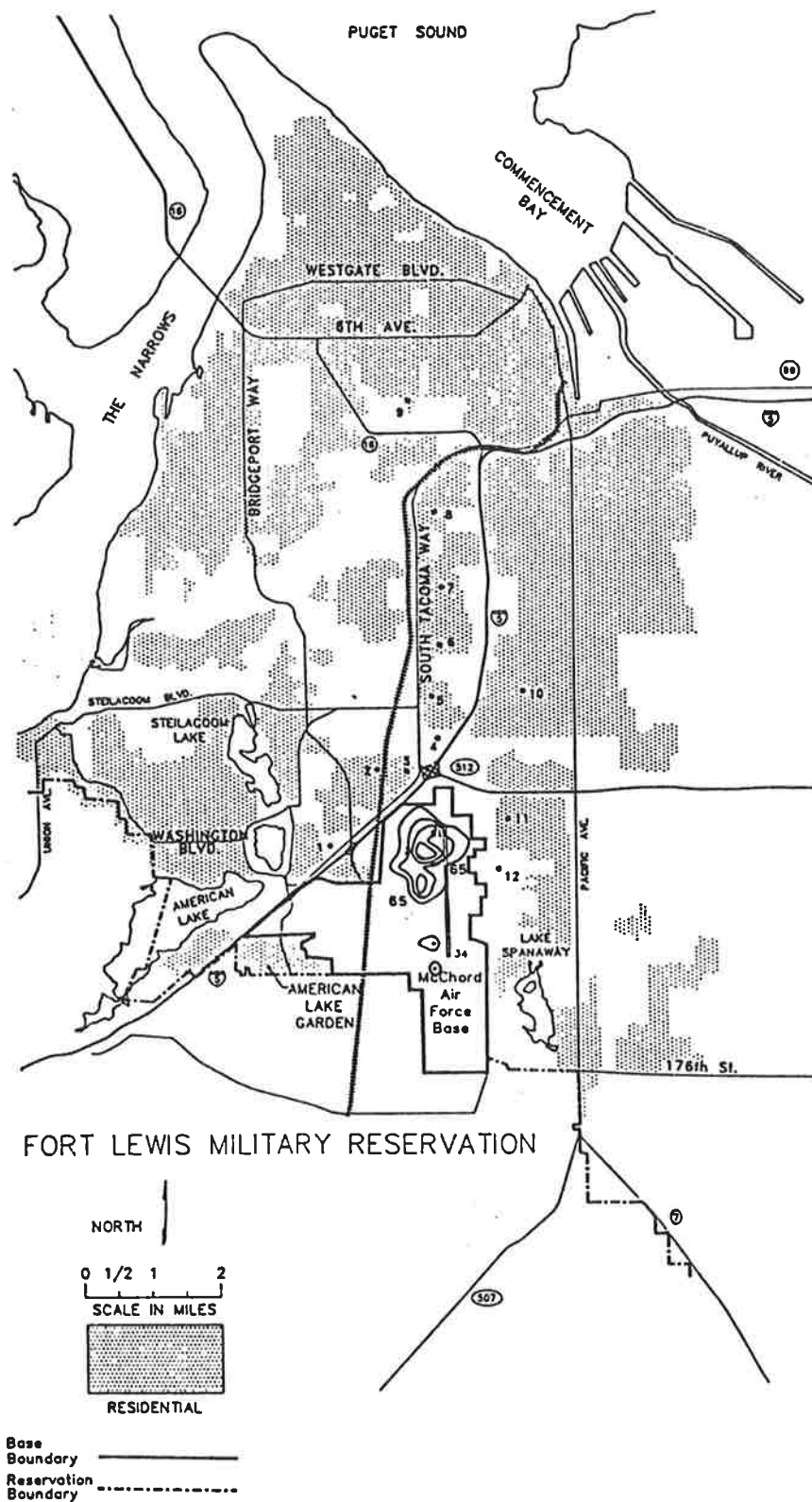


Figure 4.10

Baseline Ldn Contours for Ground

Run Up Operations Only

Winds permitting, essential military takeoffs between 11:00 p.m. and 6:00 a.m. generally are to the south [flying over Fort Lewis property] (Runway 16), and essential landings are to the north (Runway 34) to minimize noise impacts in Tacoma; and

Maintenance ground run-up testing normally is not permitted between 11:00 p.m. and 6:00 a.m..

ANALYSIS

Complaints regarding special training and maintenance procedures focus on times of day when single event noise levels are most likely to affect the daily routines of McChord's neighbors. In addition, repetition of noise events within a short time frame from training and ground run-ups is a greater annoyance than sporadic approach and departure flights.

Touch-and-go landings, ground run-ups, and night flying are included in the overall Ldn noise contours shown in Figure 4.6. The methodology used in creating the Ldn noise contours recognizes a greater annoyance factor in training, run-ups and night flying. Computation of Ldn noise contours begins with single event energy descriptors and adds corrections for the number of events and time of day. For example, since nighttime events are considered more annoying than daytime events, 10 decibels are added to the actual sound energy measured when calculating average day-night noise levels. A similar weight is assigned to repetitive noise events.

Recorded complaints confirm that specific noise events are major contributors to annoyance from aircraft operations. Although these events are part of the formula for generating Ldn noise contours, the Joint Land Use Study elected to explore specific recommendations to address touch-and-go landings, ground run-ups, and night flying as single noise events and as events that are amenable to solutions in addition to those offered for aircraft noise generally.

ALTERNATIVES

- a. Engine run-up areas should be sound buffered or located in special test facilities.
- b. Night training should be scheduled at remote locations if feasible.
- c. Public awareness should be increased to explain need for training flights, ground run-ups and nighttime flying.
- d. Simulation training should be increased.

RECOMMENDATIONS

1. Dismounted engine run-ups should continue to occur in special sound buffered test facilities.
2. Mounted aircraft engine run-ups should continue to occur as far away as possible from residential areas and noise sensitive land uses; or where topography reduces noise.
3. Simulation training should be increased to decrease noise problems.
4. The military should develop public information programs to explain the need for training flights, ground run-ups and nighttime flying.
5. The military should continue to schedule night operations at remote locations when feasible.

SECTION D - TRAINING AND ARTILLERY/SMALL ARMS SAFETY

Training and combat readiness activities on Fort Lewis include weapons qualifications training conducted on specially designed ranges and field training of designated portions of the installation. Infantry and artillery activities dominate, although engineering and other support units also train at the installation. Seasonal and weekend training includes eight weeks in summer by the Reserve Officers Training Corps (ROTC), and summer and weekend activities by Army National Guard and Army Reserve units. Public law enforcement agencies, such as the FBI, Washington State Police and Sheriff's Offices, also make use of the small arms ranges.

To accommodate the wide range of activities, Fort Lewis has divided its acreage into 23 major training and maneuvering areas, four impact areas (North Fort, Central, South and Artillery) and an ammunition supply point. Training and maneuver areas are able to accommodate nearly all types of ground and aircraft overflight requirements.

All firing ranges have specific limitations on the type and direction of weapons use. All ranges include standard surface danger zones (hazard zones), and are contained within the Fort Lewis boundary. Artillery are fired from points around the perimeter of the Fort toward designated impact areas in the center of the installation. Warning signs are posted to advertise danger zones to prevent civilians or unauthorized military personnel from entering. Other methods employed to insure public safety include road barriers, range guards, and flags.

Firing ranges with proximity to public roads or entry points and the outer limits of ricochet areas are posted with permanent signs. These warnings alert people of the danger associated with firing ranges and with unauthorized handling of unexploded ammunition (duds).

From a military perspective, training activities simulate various tactical operations, such as attack, defense, or reconnaissance. All of these exercises consist of troop units maneuvering cross-country either on foot or in wheeled or tracked vehicles. Some of the exercises might also involve helicopter operations, including low level of flights, landings and takeoffs, repelling, airdrop, and live firing or dropping of ordnance or flares into established impact areas. Much tactical training occurs at night.

Issue #1: Danger to civilian property from fires started on-installation.

DESCRIPTION

The range of maneuvers conducted by personnel using the training facilities at Fort Lewis includes many that pose potential fire hazards. Sparks from operating machinery, combustion from flares, ordnance and pyrotechnic ammunition (e.g., fireworks; especially, rockets, flares, smoke bombs, and the like) and campfires can be particularly dangerous during dry, summer months.

At the time of this study, the Fire Protection and Prevention Branch, under the Operation and Maintenance Division of the Directorate of Engineering and Housing (DEH), is responsible for base fire control. Grass and brush fire control is also under DEH but is the responsibility of the Forestry Branch, Environmental and Natural Resource Division. Fire trails are established and maintained throughout the training areas.

CURRENT POLICIES AND REGULATIONS

Fort Lewis responds to fires, vehicle accidents, hazardous material spills, medical emergencies, and other incidents on or off the installation in a joint effort with civilian counterparts. Mutual Aid Agreements are in place with Fire Districts in four counties and McChord AFB.²

ANALYSIS

Public complaints about fires caused by training on Fort Lewis originate from residential areas adjacent to Training Areas 11 and 15. These two areas form the eastern most boundary of Fort Lewis, abutting the Mountain Highway (SR-7) from the Roy "Y" to East 260th Street in Pierce County. Much of this military property is prairie or sparsely wooded. The adjoining area known as the Bethel area has one of the highest rates of development in Pierce County.

Civilian land uses along this strip are characterized by medium-sized lot residences with several commercial service pockets. In many cases, the residences (primarily single- and double-wide mobile homes) are located within 50 feet of Fort Lewis property.

ALTERNATIVES

- a. Restrict fire-prone activities during very dry weather.
- b. Insure that training areas are accessible by fire fighting equipment.
- c. Design fire breaks to prevent the spread of fire off-post.
- d. Explore ways to reduce fire risks related to training activities close to civilian borders.

² Thurston County (#3 Lacey), King County (#28 Enumclaw, #39 Federal Way, #46 Newaukum), Pierce County (#1 Sumner, #2 Lakewood, #3 University Place, #4 Midland, #5 Gig Harbor, #6 Parkland, #7 Spanaway, #8 Edgewood, #9 Summit, #10 Fife, #11 North Puyallup, #12 Buckley, #13 Browns Point, #14 Riverside, #15, #16 Peninsula, #17 Roy, #18 Orting, #21 Graham, #22 Lake Tapps, #23 Ashford, #24 Bonney Lake, #26 Greenwater, #27 Anderson Island), Yakima County (#4 Yakima).

- e. Increase readiness of fire fighting personnel during dry weather and training activities prone to produce fires.
- f. Require greater separation between civilian development and Fort Lewis boundary (property line).

RECOMMENDATIONS

- 1. Insure civilian and military fire fighting equipment have access to military training areas.
- 2. The military should continue to monitor fire risks related to training activities to prevent fire risks off-installations.
- 3. Future construction adjacent to the installation should provide for fire protection at Fort Lewis boundaries.

SECTION E - ARTILLERY/SMALL ARMS NOISE

Noise produced by artillery and small arms fire is a by-product of the training mission at Fort Lewis. Training is used both to familiarize army personnel with weapons operation and to condition them for noise levels experienced under actual combat situations. With increasing growth demand around the Fort, the potential exists for incompatible development along the boundaries of the installation. Residential development may lead to conflicts between the Army and the civilian community.

In an effort to address noise concerns from surrounding communities, Army planners have developed land use compatibility guidelines based on levels of noise exposure. These are intended to assist local governments in zoning and planning around Army installations. The Army Installation Compatible Use Zone Study (ICUZ) was completed in 1988 for Fort Lewis.

MEASURING NOISE

Planning for compatibility in areas affected by weapon noise is linked to the generation of noise contours using Day-Night Average Sound Level (DNL). The ICUZ study uses C-Weighted DNL ³(C-DNL) which provides a more accurate measure of high amplitude impulsive noise. Typical sources of impulsive noise include demolitions and 40 millimeter and larger size weapons.

Noise contours define the average noise measured on and around artillery locations using C-DNL. These contours can be interpreted to represent different levels of population annoyance. There is agreement that noise levels below 62 C-DNL are acceptable.

EXISTING NOISE CONTOURS

Fort Lewis: To produce the C-DNL contours for Fort Lewis, data was collected describing the weapons, weight of explosive in the projectile, weight of the different propellant charges, and the directivity pattern (variation of the noise pattern emanating from the source). There are two charges to be considered, the amount of propelling charge at the firing point and the amount of projectile charge exploding at the target point. These values vary for different weapons and ammunition. This information was entered into a computer modeling program called MicroBNOISE⁴. A set of C-DNL noise zones was produced which reflect current artillery operations level at Fort Lewis.

³C-weighted Sound Level means the sound pressure level in decibels as measured on a sound level meter using the C-weighted network. The C-weighting measures the low frequency component of noise that can cause building and windows to shake and rattle and which is an important ingredient in a person's perception of the annoyance from blast activities. High amplitude noise resulting from armor, artillery, and demolition firing are best described in terms of C-DNL.

⁴ Hoffman, S. D., Fittipaldi, J. J., Gauthier, R. G., and Cole, M. E., MicroBNOISE: A User's Manual, US Army Corps of Engineers, Construction Engineering Research Laboratory, Technical Report N-86/12, June, 1986.

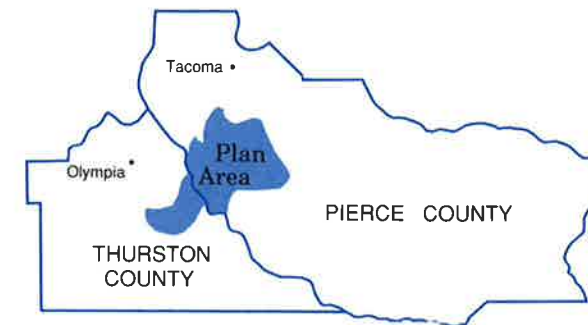
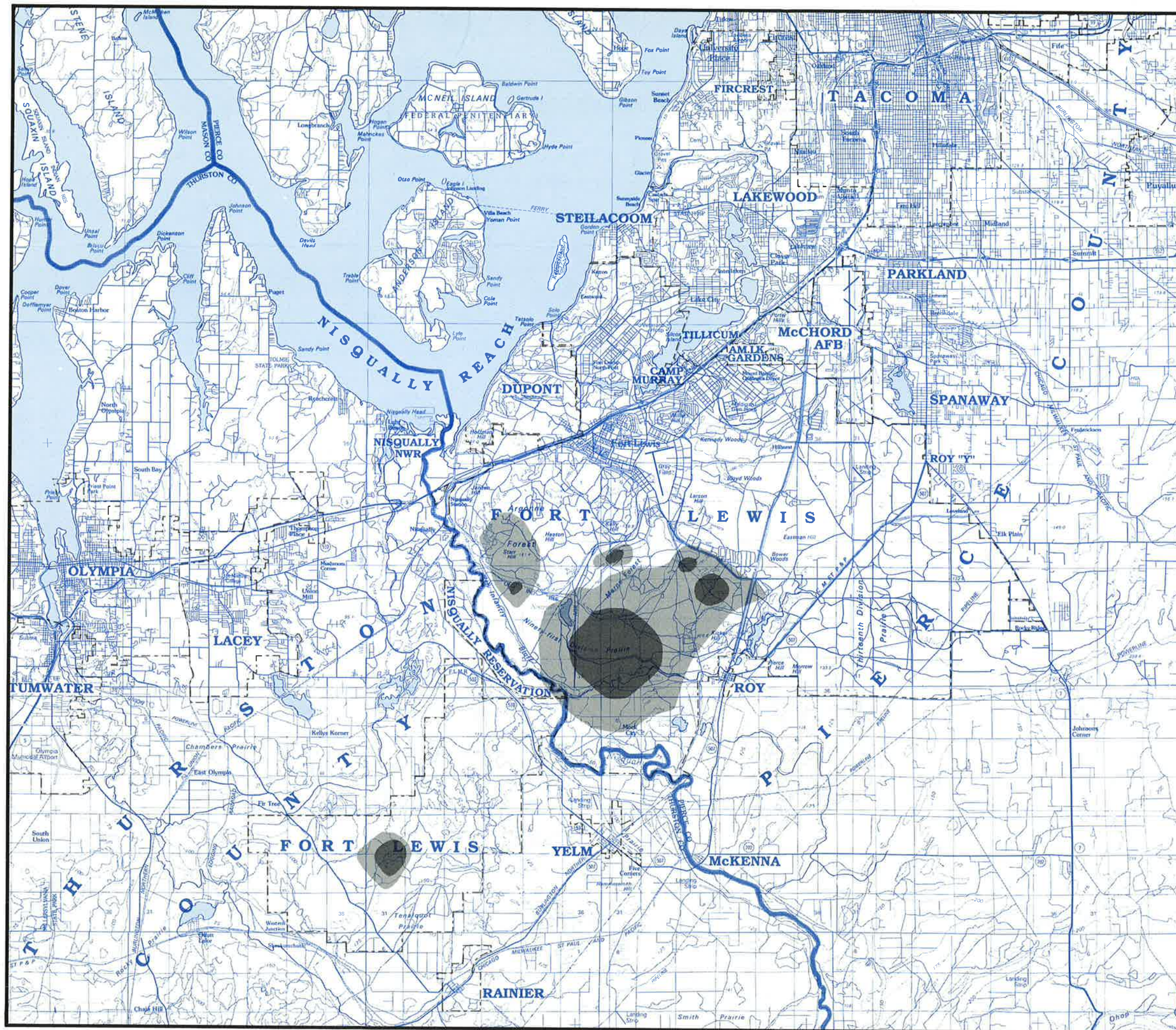



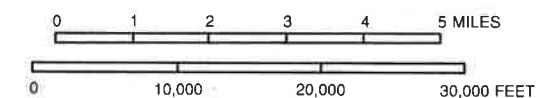


Figure 4.11
FORT LEWIS
ARTILLERY NOISE CONTOURS

-  Noise Zone 3 (NZ3)
>70 C-DNL
-  Noise Zone 2 (NZ2)
62-70 C-DNL
-  Noise Zone 1 (NZ1)
<62 C-DNL

Base Map compiled from USGS 1:100,000 Scale Map Series
November 1991



Pierce County Department of Planning and Land Services



JOINT LAND USE STUDY

TABLE 4.20
ICUZ NOISE ZONES

NOISE ZONE	SOUND LEVEL	COMPATIBILITY
NZ I	<62 C-DNL	Moderate to minimal noise exposure, acceptable for noise sensitive land uses.
NZ II	62-70 C-DNL	Significant noise exposure, is "normally unacceptable" for noise sensitive land uses.
NZ III	> 70 C-DNL	An area of severe noise exposure, unacceptable for noise sensitive land uses.

Source: Installation Compatible Use Zone (ICUZ), Fort Lewis, 1988.

The C-DNL contours delineate three noise zones (NZ). ICUZ land use compatibility guidelines are based on these zones, which are described in Table 4.21

TABLE 4.21
ICUZ LAND USE COMPATIBILITY GUIDELINES

LAND USE	ZONE I	ZONE II	ZONE III
Residential	Acceptable	Generally Unacceptable	Unacceptable
Manufacturing	Acceptable	Acceptable	Acceptable
Transportation, Communication, and Utilities	Acceptable	Acceptable	Acceptable
Trade	Acceptable	Acceptable	Acceptable
Public Services	Acceptable	Generally Unacceptable	Unacceptable
Cultural, Recreational, and Entertainment	Acceptable	Generally Unacceptable	Unacceptable
Agricultural	Acceptable	Acceptable	Acceptable
Livestock Farming and Animal Breeding	Acceptable	Acceptable	Unacceptable

Source: Federal Interagency Committee on Urban Noise, "Guidelines for Considering Noise in Land Use Planning and Control." U.S. Dept. of Transportation, 1980.

Issue #1: *Residents surrounding Fort Lewis are affected by artillery and small arms noise.*

DESCRIPTION

Fort Lewis conducts a wide variety of mission-related training that involves firing and detonation of artillery. Since 1984, the following facilities were available for training on the installation:

38 Active Artillery Firing Points

- 14 Active Mortar Points
- 38 Active Marksmanship Ranges
- 6 Active Live Fire Maneuver Ranges
- 2 Active Tank Ranges
- 5 Active Anti-Tank Ranges
- 2 Active Grenade Ranges
- 1 Active Demolitions Range

These activities at these facilities produce much noise, concussion effects, and vibration. Citizens at public workshops described dishes walking off of tables, reactions of animals, and waking at night as some of the effects of noise and vibration on their lives. It is clear that if residential land use is designated next to the Fort, conflict is inevitable. Although the Yakima Firing Range can be used for some training activities, others must be scheduled at Fort Lewis.

CURRENT POLICIES AND REGULATIONS

Fort Lewis Installation Compatible Use Zone Study (ICUZ): The Fort Lewis Installation Compatible Use Zone Study recommends that Fort Lewis, "coordinate with civilian planning and zoning agencies to maintain compatible land uses around the installation." The Fort has followed this recommendation in their support and participation in the Joint Land Use Study.

ICUZ required that Fort Lewis adopt ICUZ recommendations into the Fort Lewis Master Plan and recommended that local governments adopt policies as follows:

Policy #1. In order to promote the public health, safety, comfort, convenience, and general welfare of the inhabitants of the Fort Lewis environs, it is necessary to:

1. *Guide, control and regulate future growth and land development.*
2. *Promote orderly and appropriate use of land.*
3. *Protect the stability and character of existing compatible land uses.*
4. *Enhance the quality of living in the areas affected.*
5. *Protect the overall economic welfare by restricting incompatible land uses.*

Policy #2. Incorporate the Installation Compatible Use Zone Program into existing land use plans, modifying them when necessary to:

1. *Establish guidelines of land use compatibility.*
2. *Restrict or prohibit incompatible land uses.*
3. *Curtail the establishment of any land use that would endanger Fort Lewis operations and training.*

Policy #3. Within certain noise zone boundaries, various land uses are inherently incompatible. Also, excessive noise levels of varying frequency and duration create potential hazards to social and physical health and well-being. Where these conditions exist, certain land uses should not be allowed because they are inconsistent with the public health, safety and welfare. They are as follows:

- 1. Residential.*
- 2. Public buildings (schools, medical facilities, religious facilities, etc.).*
- 3. Cultural facilities.*
- 4. Recreational facilities.*

Policy #4. Zoning and land use planning in the noise impacted areas cannot be based solely on Army operation and training noise effects. These characteristics should be added to the list of other characteristics that are normally considered such as:

- 1. Physiographic or natural features.*
- 2. Soil and surface geology characteristics.*
- 3. Hydrology and vegetation.*
- 4. Existing land use and utilities.*
- 5. Daytime population density.*
- 6. Other environmental considerations, e.g., air quality, solid waste.*

Other recommendations are as follows:

Surrounding counties and municipalities near Fort Lewis should incorporate the installation noise contours into comprehensive plans to effectively guide the future development of the area. These contours could be used as a basis for approval or disapproval of certain land uses.

Additional residential and other noise sensitive uses in areas immediately adjacent to the Fort Lewis boundary should be strongly discouraged.

It is recommended that all counties and towns around Fort Lewis include a noise compatibility section in their building codes to define specific requirements applicable to construction in areas where high noise levels exist. The code should require certain building insulation standards based on noise levels. The issuance of building permits should reflect compliance with these standards.

It is recommended that counties and towns surrounding Fort Lewis establish a noise level disclosure provision that makes a potential home buyer aware of existing noise levels in the community.

It is advisable for all counties and jurisdictions surrounding Fort Lewis to consider the adoption of a site design review process by which environmental factors are considered and integrated into a plot or land plan.

... it is recommended that the area between the City of Roy and the Town of McKenna be developed for Industrial use to achieve the highest and best use of the land.

Fort Lewis attempts to locate noise-intensive artillery training in remote areas, as far away from developed civilian communities as possible. Large-scale training events that involve potential noise impacts are communicated regularly to the community through the news media. These announcements are intended to prepare affected citizens in advance for noisy training activities. For those people who would like to register a noise complaint, the Fort Lewis Public Affairs Office is equipped to log the location and type. The Public Affairs Office Community Relations staff respond to complaints by researching the specific activity and procedures, and then discussing individual findings with each complainant.

Pierce County: Pierce County has no adopted policy or regulations that address artillery noise and land use relationships.

Thurston County: The draft Nisqually Plan proposes a Rural Residential zone with a minimum lot size of five (5) acres per dwelling unit for the area encompassed by Noise Zone II. With approximately 60 vacant acres in Noise Zone II, the 5-acre minimum lot size could provide for 12 homes.

Nisqually Indian Tribe: At the present time, the Nisqually Indian Tribe does not impose any zoning regulations. However, the Tribe has been working with Thurston County Planning Department to prepare the "Nisqually Plan, Sub-area Land Use Zoning". After the Thurston County Board of Commissioners adopts the Nisqually Plan, it is anticipated that the Nisqually Indian Tribe will adopt relevant provisions.

ANALYSIS

Artillery firing points are concentrated in Training Areas 4, 6, and 12, utilizing the Central and Main Artillery Impact Areas. Mortar firing points and marksmanship ranges cluster on the fringes of these two impact areas.

As shown on Figure 4.11, the Central Impact Area is buffered by approximately two miles of wooded terrain from both the Spanaway and Roy areas. The artillery impact area stretches across Fort Lewis from the Nisqually River to the City of Roy. On either side, less than one-half mile separates the impact area boundary and non-military land. Except for the City of Roy and some scattered residential, the predominant land uses are agricultural or vacant.

The Fort Lewis Installation Compatible Use Zone Study (ICUZ) has the broad goal of maintaining good relationships with surrounding communities. Noise Zone (NZ) identification depicts the potential for land use conflicts from operational noise. The Army considers the ICUZ guidelines for land use compatibility to be suitable for incorporation into the civilian planning process. However, it is recognized by the military that the rigid boundaries resulting from ICUZ methodology are subject to changes. Local jurisdictions should be prepared to build flexibility into measures which address long-term compatibility.

In 1988, a set of Noise Zone contours were produced for the Fort Lewis ICUZ (See Figure 4.11). Noise Zone II contours are contained entirely within the boundaries of the installation. A small portion of the NZ II contour encroaches beyond Fort Lewis in the vicinity of Collard Woods. This area is within the Nisqually Indian Tribal Reservation, in an area with no development at this time.

Noise complaints from artillery and small arms training are recorded by the Fort Lewis Public Affairs Office. Between January and September, 1991, 27 complaints related to artillery operations were logged. Of this total, 16 originated from Thurston County (including 12 from Olympia) and 11 from Pierce County. All but one (from Lakebay on the Key Peninsula) were from areas adjacent to Fort Lewis.

The concentration of complaints from Thurston County reflects the location of impact areas away from the more populated communities north of Fort Lewis. While both the Olympia/Lacey area and the Roy/Yelm area are probably equally affected by artillery noise, half of the logged complaints for 1991 originate from the west side of Fort Lewis (Olympia/Lacey). The disparity could be attributed simply to larger numbers of people to the west, or to the more "seasoned" ears of the demographically stable communities east of the Fort. Population growth in the Lacey area has meant the immigration of people unfamiliar with and potentially affected by artillery noise.

Artillery noise differs from aircraft noise in that complaints are likely to occur from a single event or series of events, as opposed to consistent noise exposure over a long period of time. In addition, weather has an effect on which southern Puget Sound communities are affected. The complaint from Lakebay on the Key Peninsula illustrates that artillery noise at an annoyance level is capable of travelling at least 20 miles.

ICUZ land use compatibility recommendations for Fort Lewis apply directly only to that small area of Noise Zone II on Nisqually Indian Tribal Lands. Every other area bordering the installation are within Noise Zone I which the Army considers compatible with all land uses.

Because most of the area surrounding Fort Lewis is mapped in Noise Zone I, the ICUZ study compatibility guidelines address little of the noise perceived by citizens. Part of the reason lies in the method used to establish the noise zones. Mapped noise zones do not reflect a measurement of actual noise events. They are the result of computer modeling that takes into account terrain, the type of weapons being fired, noise measurements of test impacts, and similar characteristics. Impact noise is mapped. Firing point noise is not mapped. Moreover, the noise levels identified in the ICUZ study are an annualized average

of all noise. The noise levels of single events is not addressed. Air pressure in the concussion effects⁵ of artillery intensify the perception of noise.

At the January 1992 public workshop, citizens suggested that if development continues as it has on the post, it might be time to consider changing Fort Lewis activities to those more agreeable to residential neighborhoods and communities. The Joint Land Use Study was commissioned to identify compatible land use to enable the Fort to continue its mission. Moving substantial operations or activities to Yakima would defeat that purpose.

ALTERNATIVES

- a. Disclosure of noise impacts should be required on all plats, earnest money agreements and rental contracts.
- b. Periodic review of noise contour by the Army and publish in paper.
- c. Include weather analysis in scheduling heavy artillery training, limit during periods when noise is most likely to travel.
- d. Encourage acoustical construction techniques to reduce interior noise levels around Fort Lewis.
- e. Investigate retrofit of homes where there is a demonstrated noise impact.
- f. Jurisdictions adopt noise attenuation standards for new construction.
- g. Military build barriers around impact areas, jurisdictions to do the same around new developments.
- h. Military should purchase noise easements in affected areas.
- i. Conduct regular meetings between military and jurisdictions to address artillery noise questions.
- j. Adopt unified noise ordinance that addresses impulse noise.
- k. Explore new technologies to "silence" weapons in non-battlefield situations.
- l. Use shells with marker loads rather than war loads.

⁵Concussion effects occur as the consequence of air displaced by the impact of artillery or similar weapons. Air is pushed out and away from the impact point in a wave motion. When the wave reaches a person, the eardrum vibrates as if a sound wave was present.

- m. Limit nighttime and weekend artillery training.
- n. Move more heavy artillery training to Yakima Firing Center.
- o. Adhere to land use compatibility guidelines in ICUZ.
- p. Evaluate existing plans and regulations to address noise impacts outside the NZ 2 contour.
- q. Military should measure single event impulsive noise levels to assist local governments in planning for land use compatibility.

RECOMMENDATIONS

1. The military should periodically measure actual impulsive noise levels at Fort Lewis, recalibrate noise models to reflect actual conditions, and reconfigure noise contours in the Fort Lewis Installation Compatible Use Zone Study (ICUZ) based on the findings.
2. Fort Lewis should update the Installation Compatible Use Zone Study (ICUZ) when there is a mission change or land use compatibility standards change, but not less than every three (3) years to allow local jurisdictions to implement the Joint Land Use Study recommendations.
3. Local governments should provide information to the public on how to achieve noise reduction when remodeling buildings.
4. The Nisqually Indian Tribe and Thurston County should adopt as "noise sensitive" areas in local Environmental Regulations, areas such as the Noise Zone II (NZ II) noise contour.
5. Local governments should insure that Building Codes reduce artillery noise transmissions through the building envelope to meet the Department of Housing and Urban Development (HUD) standards in "noise sensitive" areas.
6. Upon adoption of "noise sensitive" areas, landlords, housing referral agencies, real estate agents, sellers, and lenders should include disclosure statements in rental agreements and purchase agreements in "noise sensitive" areas.
7. Comprehensive Plan updates of affected jurisdictions should incorporate the Installation Compatible Use Zone Study (ICUZ) noise contour maps and the "Recommended Land Uses for Installation Compatible Use Zone (ICUZ) Program Noise Zones" for Noise Zone II.
8. Affected jurisdictions should prohibit the following land uses within Noise Zone II:

- a. New residential uses, unless the design of the structure and general site plan incorporate noise reduction measures to meet the Department of Housing and Urban Development (HUD) standards.
 - b. Public services and quasi-public services such as hospitals, public meeting rooms, and libraries, and cultural, recreational and entertainment land uses unless the design of the structure and general site plan incorporate noise reduction measures to meet HUD standards.
 - c. Schools, day care facilities, and other facilities which incorporate outside activities.
9. The military and local jurisdictions should develop and adopt programs which encourage preservation of natural vegetation for aesthetic and noise attenuation purposes.
10. The Department of Defense should measure actual artillery-related vibration and concussion levels in areas surrounding the Fort Lewis, map impact areas based on the degree of effect, and include this information in subsequent updates of the Fort Lewis Installation Compatible Use Zone Study (ICUZ).
11. Firing point noise should be incorporated into noise measurements and be described and mapped in the next update of the Fort Lewis Installation Compatible Use Zone Study (ICUZ).
12. Local governments adjacent to Fort Lewis should direct the following land uses away from property abutting the installation boundary:
 - a. High-density residential.
 - b. Public buildings (such as schools, medical facilities, public meeting facilities, and churches).
 - c. Cultural facilities.

SECTION F - CIRCULATION

A community's circulation system is a network for moving people and goods from various sources to their destinations. Providing adequate service levels for circulation requires careful planning that takes into consideration the different modes of transportation needed, the types and intensity of land uses being served, projections of employment and population growth, the public's perception of adequate service levels, and the trade-offs needed to meet the standards. Military installations and surrounding civilian areas share the local and regional transportation system.

Several transportation issues were identified by citizens of the Joint Land Use Study team. This section addresses the issues of the military installations contribution to traffic congestion, maintenance of military installation security, the need for a civilian cross-base transportation corridor, gate and road closures. The following discussion is a description of the issues, and concerns that help in understanding the interface existing between military and civilian policy. Alternatives are identified and actions are recommended to lessen problems or resolve current and future conflicts.

Issue #1: Contribution to Local and Regional Traffic Congestion

DESCRIPTION

Communities along the Interstate-5 corridor have experienced much development in the last few years. Without a corresponding increase in the ability of roads to carry the number of vehicles using them, growth can lead to traffic congestion. Activities at McChord AFB, Fort Lewis, and Camp Murray contribute traffic to the local and regional transportation system. Conflict can occur when growth of surrounding areas introduces traffic to the roads needed by the military to perform their mission and conversely when changes in the missions of the installations or personnel increases add traffic to the civilian transportation system. The perception of the degree to which the military contributes to traffic congestion intensifies as areas around the installation develop and add more vehicles without adding more capacity. Regardless of who was there first, commuting military personnel or operations traffic using civilian roads increases congestion.

Fort Lewis and Camp Murray use public roads for convoys of military vehicles. Convoys move personnel and equipment for training and troop operations, primarily to the Yakima Firing Range. The main route taken is along Interstate-5 to Interstate-90. Convoys are scheduled only in off-peak traffic hours to avoid causing traffic congestion.

During installation security threat conditions that demand one-hundred percent (100%) personnel identification checks, vehicle delays can occur with queues that form on Interstate-5. The existence of queues tends to reinforce a perception that the military installations contribute to local congestion problems.

Pierce County Public Works Transportation Division used the transportation model EMME-2 to illustrate the average daily trips (ADT) generated by the military installations. The

model indicates that a majority of vehicles departing Fort Lewis do so via Interstate-5. A substantial volume of traffic also exits North Fort via North Gate Road and travels on county roads to Lakewood and Steilacoom. The majority of vehicles from McChord AFB utilize county roads to the west and northwest of the base before entering Interstate-5. Of the vehicles which do access onto the freeway, a high percentage of them exit the freeway within 15 miles from the military gates. Approximately 30% of installation vehicle trips are south bound to Thurston County.

The installations acknowledge their contribution to local and regional traffic congestion. Traffic surveys conducted by Military Transportation Management Command (MTMC) for Fort Lewis have consistently pointed to a need for added capacity and traffic control devices on installation streets and public roads to which they connect. Moreover, the installations cooperate with Pierce Transit to provide alternatives to private vehicle use.

Fort Lewis: The Fort Lewis road network consists of a total 715 miles of roads; 187 miles are improved roads and 528 miles are unimproved. Approximately 107,000 vehicles enter and leave the installation daily. Of these, half (approximately 53,000 vehicles) are estimated to be commuter traffic. Traffic is distributed through eight gates, DuPont Gate/I-5 Exit MP 119, Main Gate MP 120, North Fort Gate MP 120, Madigan Gate MP 122, Logistic Center Gate MP 123, Lincoln Gate (East of Madigan), East Gate (Hwy. 507), and "A" St. Gate into Lakewood.

TABLE 4.22
FORT LEWIS GATE COUNTS AND AVERAGE DAILY TRAFFIC
ON CONNECTING ROADS⁶

Gate	Daily Gate Counts	Connecting Roads	ADTs
East	3,000	SR-507	6,100
Main	31,500	I-5	95,700
DuPont	9,100	DuPont/Steilacoom Rd.	5,055
Lincoln	4,500	150th SW/Woodbrook	11,424
North Fort	21,200	I-5	95,700
Madigan	24,800	Union/Berkeley	9,202
Logistics Center	6,600	80th Ave/150th St	693
"A" Street	6,300	DuPont/Steilacoom Rd.	6,474
Total	107,000		

Source: Fort Lewis

Pierce County Public Works Department, Transportation Division

McChord AFB: About 23,700 vehicles enter and leave McChord AFB daily. Traffic is distributed through five (5) gates. The Main Gate entrance into McChord AFB is

⁶ These traffic counts were taken in 1988-89. They are representative for conditions when Fort Lewis was at its maximum headcount prior to the 9th Infantry Division transition.

Bridgeport Way. Bridgeport Way connects to I-5 at a major interchange that also serves Lakewood and Steilacoom bound vehicles. Other gates into McChord AFB are located on South Tacoma Way via Union Avenue (North Gate), Lincoln Boulevard via Woodbrook Road (Family Housing Gate), and near Spanaway Loop Road via Old Military Road East (East Gate).

TABLE 4.23
MCCHORD GATE COUNTS AND AVERAGE DAILY TRAFFIC
ON CONNECTING ROADS

Gate	Daily Gate Counts	Connecting Roads	ADTs
Main	14,000	Bridgeport/Clover Creek Bridge	22,404
North	5,500	112th Street/Steele	18,688
East	4,700	Spanaway Loop Rd./Old Military Rd.	9,588
Family Housing	N/A	Woodbrook	6,494
Total	23,700		57,174

Source: MTMC Study, 1987
Pierce County Public Works Transportation Division

CURRENT POLICIES AND REGULATIONS

McChord Air Force Base Transportation Plan: The McChord AFB Transportation Plan utilizes existing County arterial roadways and on-base routes. Future plans project closure of Perimeter Road and East Gate, a new gate at "A" Street on the south end, and connect to the proposed cross-base roadway. These actions will take place only if the cross-base roadway is constructed. Other projects upgrade existing streets and improve safety.

Fort Lewis: Convoys must obey the Motor Vehicle Laws of the State of Washington and local regulations. Fort Lewis also has regulations that convoys must adhere to when entering and leaving the installation. Convoys are scheduled for off-peak hours, whenever possible, to avoid contributing to traffic congestion. Routes are established to minimize transit through metropolitan areas. Fort Lewis recommends that military vehicles use lesser trafficked off-post routes to avoid congestion on certain roads and minimize conflict with civilian vehicles.

Fort Lewis Master Plan Update, Analytical Environmental Assessment Report, December 1983. The "Tabulation of Existing and Required Facilities" and "Future Development Plans - Road and Railroad Plan" describe future ground transportation facilities. Road improvements are primarily upgrades to increase traffic capacity. The Report states that the transportation portion of the plan "will have no effect on regional transportation systems" because it did not project an increase in personnel. The on-installation improvements would not increase the amount of traffic either entering or leaving the installation. The plan also encourages the building of "a four-lane cross-base arterial".

At the time of this study, none of the participating cities in Joint Land Use Study (JLUS) nor Thurston County has an adopted Transportation Plan that addresses military-related traffic or transportation needs.

Pierce County - Transportation Plan and Transportation Policy Document: The Pierce County Transportation Policy Document does not speak directly to traffic issues concerning the military installations. The plan focuses on current and future transportation issues such as increasing mobility, improving safety, decreasing congestion, and completing critical connections in the transportation system. The Pierce County Transportation Plan, Transportation Assessment Report notes that the military installations effect the regional circulation system by being a major traffic generator.

Following is the list of policies related to the Joint Land Use Study from Pierce County Transportation Policy Document:

Policy #42. Compatibility With Adjacent Land Uses: Pierce County seeks to insure that planned transportation system improvements are compatible with adjacent land uses and minimize potential conflicts.

Focus Areas. For further development of the Transportation Plan for Pierce County, the County has been divided into six focus areas. The West, Mid, and South County Focus Areas extend into the Joint Land Use Study Area. Issues emerging from this process have been identified as follows:

- (1) **West County Focus Area:** The I-5 corridor south of Tacoma and west. This area includes the cities of Fircrest, Steilacoom, and DuPont; the unincorporated county areas of University Place and Lakewood; all three military installations with substantial portions of their personnel residing off-base, and Anderson, Ketron, and McNeil Islands. The area is densely populated and is one of the fastest growing areas in Pierce County.

Major transportation issues in the West County area include:

- Congestion in the north-south corridor between Lakewood and University Place, i.e., Bridgeport Way.
- Safety concerns related to aging roadways and increasing truck traffic. Also, volume and congestion concerns around central Lakewood, Lakewood Hospital, the mall, and on local streets.
- Ramp congestion and back-ups on connections to and from Interstate-5.
- Lack of roadway capacity for rapidly increasing traffic in this highly developed area.

- (2) **Mid-County Focus Area:** Mid-County consists of Parkland, Spanaway, the City of Puyallup, and the South Hill area south to Graham. The area is experiencing some high growth pressures and still relies mainly on an rural arterial system to serve increasing traffic. Transportation issues in the Mid-County Focus Area include:
- Congestion in numerous locations.
 - Pedestrian walkways.
 - Appropriate roadway design standards.
 - New road connections.
 - Safety concerns along major routes.
- (3) **South County Focus Area:** The South County Focus Area extends from Graham south to Thurston and Lewis Counties. The cities of Roy and Eatonville are contained in this area. Major transportation routes include SR-7, the Mountain Highway, and SR-507. The area is mostly rural and undeveloped so concern centers on:
- Design, construction, and maintenance standards for rural highways and roads.

**TABLE 4.24
FORECAST AVERAGE DAILY TRIPS (ADT) TRAFFIC
INCREASES TO THE YEAR 2000**

	1990	2000	% Increase
Mid-County Focus Area	261,100	359,400	38%
South-County Focus Area	14,200	18,100	27%
East-County Focus Area	80,600	119,200	48%

Source: 1990 Pierce County Transportation Plan

OTHER STUDIES CURRENTLY UNDERWAY

Interstate-5 South High Occupancy Vehicle (HOV) Study: The Interstate-5 (I-5) South High Occupancy Vehicle Study is an interim study to identify early opportunities for installing HOV facilities and using Traffic System Management techniques along the I-5 corridor between downtown Seattle and the Fort Lewis/DuPont area. The study is being performed by District 3, Washington State Department of Transportation. Initial segments of HOV lane are now in place in King County.

Interstate-5 Pierce County Design Study: The Interstate-5 corridor through Pierce County is currently under study by the Washington State Department of Transportation (WSDOT).

The study will address capacity improvements, the long-term potential for adding High Occupancy Vehicle (HOV) lanes, noise walls, and a master plan for landscaping needed to serve projected travel demand for the year 2010. The study will provide data and alternatives from which WSDOT will set priorities for future construction.

Growth Management Act: The Growth Management Act (GMA) established transportation as a mandated element for comprehensive planning for the jurisdictions participating in the Joint Land Use Study. The Growth Management Act also authorized the establishment of Regional Transportation Planning Organizations (RTPO). The RTPOs have two principal responsibilities. The first is to certify that the transportation elements of the comprehensive plans adopted by counties, cities, and towns within the region conform with required comprehensive plan elements. The second is to develop and adopt a regional transportation plan that is consistent with county, city, and town comprehensive plans and state transportation plans.

To assist the RTPO in its responsibilities, the RTPO establishes a transportation policy board. The board is composed of representatives of major employers within the region, the Department of Transportation, transit districts, port districts as well as member cities, towns and counties. This board participates in policy making by providing recommendations to the RTPO.

Pierce County and the cities and towns within the county are members of the Puget Sound Regional Council which meets the requirements of a RTPO. Major employers have not been identified to serve on the transportation policy board. Opportunity exists for the military installations to actively participate in regional transportation planning.

Pierce County Six-Year Road Program: The purpose of the Six-Year Road Program is to update County plan for transportation improvement programs and projects on an annual basis. The document provides a basis for matching needed roadway, bridge, traffic signal, and other improvements with available funding sources. Several construction and improvement projects are delineated for the study area. Although the program anticipates funding sources, actual funding depends upon priority; local, state, and federal funds available for construction or studies. Accordingly it is uncertain if and when these projects will be completed.

Cross-Base Corridor Study: The purpose of the Cross-Base Corridor Study is to determine the feasibility and recommend a location for a new roadway, extending from Interstate 5 in a southeasterly direction across the Fort Lewis/McChord AFB military installations to Pacific Avenue (SR-7) south of Spanaway, in the vicinity of 176th Street East. A route across Fort Lewis and McChord AFB could provide improved access for installation personnel to residential areas and offer a more direct link to Interstate-5 for residents of Spanaway and adjacent South Pierce County areas.

ANALYSIS

Both Pierce and Thurston Counties have witnessed substantial growth during the last ten years. Pierce County had an average yearly growth rate of 1.9% between 1980 and 1990, and has seen a population increase of approximately 88,700 people. The Washington State Office of Financial Management reports that Pierce County experienced a three percent (3%) population gain between 1990 and 1991. Thurston County in the last ten years has had an annual population increase of 2.7% and a total population increase of approximately 137,700 people. Some of these people are active duty personnel. All of the people use the local and regional transportation system.

As the civilian population has grown, the active duty personnel stationed at the installations have been temporarily reduced due to the inactivation of the 9th Infantry. By 1996, however, active troops stationed at Fort Lewis are expected to increase to 27,000 active duty personnel plus their dependents. Military population decreased with the inactivation of the 9th Infantry and will be replaced by the move of the 7th Infantry from Fort Ord in California by 1995. A ten percent (10%) increase in 1985 personnel levels is expected. McChord AFB is expected to increase from 4,656 in 1990 to 5,500 personnel by 1995.

Because there is not sufficient on-installation housing, civilian housing will be mandatory for many troops. Commuting personnel will contribute to current congestion problems. However, civilian population growth has been primarily responsible for the increased traffic and circulation problems participating jurisdictions are experiencing. There is a perception and have been complaints by the civilian community that military convoys contribute to traffic congestion along the routes they travel. However, no other information or data is available to substantiate that claim.

Pierce County is in the process of conducting a study of transportation county-wide and through computer modeling is making projections of travel demand. The study will provide much of the data needed for Pierce County, the military installations, and cities located within Pierce County to develop their transportation plans. Communities without a current transportation plan need to develop a plan that permits informed choices and decisions. Given limited funds for road construction, transportation system management (TSM) techniques can provide alternative ways of transporting people and conserving capacity. Typical TSM measures include encouragement of carpool/vanpool formation through ride matching programs, providing preferential parking for HOV's, bus pass subsidies, increased parking fees and ramp metering at freeway entrances.

ALTERNATIVES

- a. Improve, enlarge, and add other transportation modes to Highway 512.
- b. Construct a cross-installation transportation corridor.
- c. Explore an alternative cross-installation route which connects 176th Street to the DuPont area.

- d. Encourage local governments and military installations decisions which promote high occupancy vehicle usage and discourage single occupancy vehicle usage.
- e. Reconstruct the intersection of Military Road and Spanaway Loop Road; and increase lanes on Spanaway Loop Road and Military Road.
- f. Design and construct off-installation road improvements with military assistance.
- g. Use State and Federal highway funds to widen Interstate-5 overpasses to relieve congestion.
- h. Require developers to propose traffic mitigation plans before approval is granted and require developers to mitigate congestion impacts.
- i. Continue to schedule convoys to avoid peak hours and congested routes.
- j. Military personnel could perform traffic assessments and evaluate the effect of operations policies on local traffic conditions.

RECOMMENDATIONS

- 1. The military should cooperate with local governments to develop transportation demand management programs.
- 2. The military installations should assist in the analysis and planning of transportation improvements to accommodate traffic generated from military activities.
- 3. Transportation funding sources should be asked to give special consideration to funding transportation projects that support the military mission.
- 4. Encourage local jurisdictions to place a high priority on transportation improvements that reduce congestion in the vicinity of military installations.
- 5. The Regional Transportation Plan and all other transportation plans should consider the military's projected long-term transportation needs.
- 6. The military should provide information on their long-term transportation needs to the local governments.
- 7. The Puget Sound Regional Council should include the military as a member of the Regional Transportation Plan Policy Board.

Issue #2: Reservation Geography as a Subregional Traffic Barrier

DESCRIPTION

Fort Lewis, McChord Air Force Base, and Camp Murray form a consolidated block of land 142 square miles in size with restricted access. As Pierce County develops to the south and east, pressure is mounting to bridge the military installations with a civilian transportation corridor. Parkland, Spanaway, and Frederickson areas are expected to increase in population by 50,000 people over the next 30 years. Growth of assigned military personnel will add to the demand for civilian surrounding the installations. The majority of principal access gates are located on the west side of the installations. Much new housing is being constructed to the east of the installations.

Although the Frederickson area is developing as an employment center, much of the population to the east of Fort Lewis is expected to work in the Lakewood community and points north. Additional north/south routes are being explored to serve southeast areas as a function of meeting the transportation needs of Frederickson growth. However, even if a new arterial connection to SR-512 is constructed, as Frederickson develops there will be increasing demand for a direct east/west connection to Interstate 5.

The possible location of a transportation corridor through the military installations has raised the following issues:

- * Effect on noise sensitive areas of the installations;
- * Effect of a new noise source with cross-base highway and existing noise environment on the cumulative noise environment;
- * Public reaction to possible construction;
- * Non-motorized right-of-way in conjunction with corridor; and
- * Environmental concerns.

Pierce County is preparing a feasibility study of the need for and alternative alignments and configurations of a cross-base arterial. All issues will be addressed in the study.

CURRENT POLICIES AND REGULATIONS

Fort Lewis: The document incorporates a recommendation made by the Military Traffic Management Command in a 1982 Traffic Engineering Study for a cross-installation arterial. The arterial would connect Madigan Gate through to DuPont Gate with a four-lane divided, limited access road, bypassing on the perimeter of the Community Center. Approximately half of this roadway improvement has been completed. Existing two-lane streets connect the arterial to East Lincoln Drive. An seven hundred foot (700) extension of East Lincoln Drive is also proposed.

The Fort Lewis Command has stated to the Cross-Base Corridor roadway study team that a county road would be acceptable only if the following conditions are met:

1. The cross-base highway is confined to an Installation Boundary corridor.
2. Direct access to McChord Air Force Base from Fort Lewis is provided.
3. The highway would not interfere with on-going installation activities.
4. Physical security of Fort Lewis and McChord AFB is provided, such as cyclone fencing. The additional security measures are necessary for the cross-base highway when passing the Ammunition Supply Point area.
5. Noise abatement features are incorporated into the highway design near on-installation housing.
6. All aspects of the construction will be at no cost to the Department of the Army.

McChord Air Force Base: The Command identified the following concerns and requirements to minimize impacts of the roadway on installation operations:

1. County zoning regulations to prevent more encroachment of incompatible development north of the base and adoption of the principles of the AICUZ study.
2. Limit impact of the road on both Air Force and Army installations by following existing boundaries as closely as reasonably possible per a modified "P" line alignment.
3. Recognition and support of closure of Perimeter Road, Woodbrook Road, and McChord's east gate.
4. Recognition and connection to planned "A" Street South Gate entrance at McChord AFB.
5. Cross-base Corridor roadway to be designed as minimum four lane roadway, with an eight-foot chain link security fence on both sides through military property.
6. Connection to McChord AFB and to Fort Lewis to be provided by provision of directional access and grade separation.
7. Comply with clearance requirements for Fort Lewis Ammunition supply point.
8. No cost to accrue to the Air Force or Army as result of this proposal.
9. Proximity of road to military housing will require noise barrier wall construction, possibly other noise attenuation consideration.

Pierce County - Parkland-Spanaway Comprehensive Plan: The Parkland/Spanaway Comprehensive Plan contains the following policies:

- Policy #1.120. Pathways should be planned in coordination with state and federal agencies.*
- Policy #2.050. Arterials shall serve as connecting links between residential areas, commercial, public facilities, and employment centers.*
- Policy #2.080. State Route 512 should remain the only arterial connecting the area with Interstate-5.*

Pierce County - Transportation Plan Policy Document: The Transportation Plan contains policy guidelines as follows:

"Compatibility of Transportation with Land Use" policies aim to minimize the negative effect of transportation on surrounding land uses and to make sure that the adjacent land use is compatible with the transportation activity. The focus of these policies includes protecting residential areas from the impacts of major roadways.

"Design Guidelines for Land Development" policies incorporate transportation goals and considerations directly into land development design plans. The policies encourage providing for transit access to and within developments; providing for pedestrians and other non-motorized transport; controlling access to and from arterials; and coordinating access for developing areas along roadways. Environmental protection in the design and construction of new roads is emphasized.

ANALYSIS

Pierce County Department of Public Works is currently preparing a study for development of a cross-base corridor arterial roadway. Timing of the corridor study completion does not permit inclusion of its findings. Discussion of the study is important to identify actions planned and factual information and analysis that will be forthcoming.

The cross-base corridor study will determine the feasibility of a new highway and recommend a location for a new major roadway. The general area where attention is being focused extends from Interstate 5 in a southeasterly direction across Fort Lewis and McChord AFB to Pacific Avenue (SR-7) south of Spanaway, a distance of six (6) miles. The study includes engineering, transportation planning, an environmental inventory, and interagency coordination adequate to select a corridor and proceed to full environmental design. Potential corridor alignments will be evaluated.

Coordination with and support by the military is pivotal to the study. A project report will be prepared to document the results of the preliminary engineering and transportation studies. Coordination will occur in three ways; data and regulation collection; Interagency Team meetings; and military presentations. Researchers will contact the military to

determine applicable environmental regulations or other information useful for project development. The Interagency Team members provides comments and suggestions for the development of the corridor design. Military representatives will participate in Interagency Team meetings. Project status presentations inform senior military personnel at appropriate stages and receive any comments or suggestion.

The initial transportation model assumes the closure of Perimeter Road from East Lincoln Drive to Spanaway Loop Road. Initial modeling based on predicted land use and transportation improvements have indicated that a new cross-base arterial would carry significant traffic volumes. Much of the traffic using the new arterial would travel to and from the military installation; only a moderate volume of traffic is forecast to travel between Interstate 5 and Pacific Avenue. Frederickson traffic is expected to use north/south routes. It is not likely that the arterial will attract enough traffic from Pacific Avenue, north of 176th Street, to have more than a minor impact on Pacific Avenue congestion.

Other alternatives under consideration for the County Transportation Plan would improve arterial capacity for Spanaway, Parkland, Frederickson, and surrounding areas by focusing traffic flows in routes where they can be most efficiently accommodated. Improvements to north-south routes are being considered.

Resolution of the issue of the current barrier to transportation posed by the military installations must take into consideration the ongoing requirement of maintaining base security.

An additional consideration must be in any diminishment of the installation's effectiveness and ability to meet its defense mission resulting from restructuring base operations to accommodate dedication of the corridor route.

ALTERNATIVES

- a. Construct a cross-installation transportation corridor.
- b. Explore cross-installation routes that connect 176th to DuPont area, not Lakewood.
- c. Create a through corridor from Interstate-5 to Military Road South at Spanaway Loop Road.
- d. Highway 512 and Nisqually River serve as East-West corridors.
- e. Construct noise buffers and security walls along route to protect military operations and on-installation residents.
- f. Design the cross-base highway as a non-stop auto way and fenced bike/horse path

- g. Limit the cross-base corridor to motor vehicles only.
- h. Limit access with tunnels and whatever necessary to maintain the integrity of military operations and installation security.
- i. Explore the construction of a limited access highway which originates east of McChord and proceeds around the southern border of the military installations.
- j. Create a through corridor from Interstate-5 to Military Road South at Spanaway Loop Road.

RECOMMENDATIONS

1. Cross-base corridors, when constructed, should be developed in accordance with affected civilian and military installation transportation plans.
2. The viability of cross-base corridors (arterial or highway) should be determined on the basis of detailed studies of population projections, military mission, land availability, land use projections, and environmental analysis of alternative routes and corridors.
3. Cross-base corridors should consider accommodating non-motorized transportation, including bicycles and mass-transit alternatives; when consistent with local and regional comprehensive plans and military master plans.

Issue #3: Congestion at Gates

DESCRIPTION

Traffic congestion at McChord and Fort Lewis gates was identified at public workshops as an issue. During peak hours, 7 a.m. to 8 a.m., and 11:30 a.m. to 1 p.m., military installation bound traffic congests access routes and queues can form on freeway ramps. Pierce County Transportation Division reports that an example of congestion to which the military installations contribute is the daily backup of cars on SR-512 in the Mid-County Focus Area. These incidents exaggerate an impression that installation related traffic is a significant contributor to local and regional traffic problems.

Pierce County has not recorded the length of delays at military installation gates. Fort Lewis reports that delays are minor.

Fort Lewis, McChord AFB, and Camp Murray have secured installation access. Military personnel, retirees and dependents are allowed access with vehicle and personnel identification issued by the military. Non-military persons who wish to enter the military installation for business, visiting family members or for recreation must obtain a visitors

pass. Passes are issued at the Main Gate of Fort Lewis for recreational uses such as horseback riding, hiking, bicycle riding, and hunting. McChord and Fort Lewis grant visitors' passes for family members, vendors and contractors. Visitors with a pass are denied access if they cannot provide proof of insurance, a current drivers license, and vehicle registration. Pierce Transit is generally permitted direct access on the Fort and McChord during their daily routes.

When the military installations are placed on alert, all personnel and visitors are checked at the gate. The security checks require additional time for each vehicle to enter the military installations. As a result, congestion at gates occur.

Fort Lewis: Fort Lewis has eight (8) gates as follows:

- 1) Main Gate;
- 2) North Fort Gate connect to an exclusive interchange to Interstate-5;
- 3) DuPont Gate connects to the DuPont-Steilacoom Road and Interstate-5;
- 4) East Gate connects to SR-507, between the Roy "Y" and the City of Roy;
- 5) Lincoln Gate connects to Perimeter Road and McChord AFB;
- 6) Madigan Gate (MAMC Gate) connects to Interstate-5, Berkeley Road, and Tillicum;
- 7) Logistics Center Gate connects to 80th Avenue Southwest;
- 8) "A" Street and North Fort Gate connects to the Steilacoom-DuPont Road.

The increase in traffic on Fort Lewis has lead to construction of a direct access and by-pass route for the Community Center and administrative office concentrations. Improvements are proposed to increase capacity of arterials during peak periods and construction of turn lanes to improve traffic flow.

Fort Lewis gate traffic is generally constant throughout the year. Approximately 107,000 vehicles enter and leave Fort Lewis daily. The gates experience heaviest traffic flows during the morning hours (5:45 to 7:30 a.m.). Of the eight gates, the Main Gate, North Fort Gate, Madigan Gate, Lincoln Gate, and East Gate are open 24 hours a day. The remaining gates may only be accessed from 5:00 a.m. to 11:00 p.m..

McChord AFB: McChord Air Force Base experiences the heaviest gate traffic in spring, summer, and fall. Some of the decreased gate traffic in winter is caused by a reduction of activities at golf course and other recreational facilities.

The four McChord AFB gates with connecting roads are as follows;

- 1) Main Gate connects to Bridgeport Way and Interstate 5.
- 2) North Gate connects to 112th Street South.
- 3) Family Housing Gate connects to Woodbrook Road and Interstate-5.
- 4) East Gate connects to Military Road and Spanaway Loop Road.

The Main Entrance and the Family Housing gates are accessible 24 hours a day. The North and East gates are open from 6:00 a.m. to 7:00 p.m. However, accurate assessments of McChord's gate activity is difficult since the Installation does not take periodic gate counts.

McChord is a closed base with permits required for access. Base planning staff are studying the possible closure of the East Gate. Base personnel maintain that closing the East Gate will improve the congestion problem in that area. Construction of redesigned gates has been completed at North Gate and Main Gate. Also, a new gate at Interstate-5 and the Gravelly Lake Drive intersection will be complete in six months and should alleviate congestion that area. Off-installation improvements benefitting Fort Lewis and McChord have been funded by local governments as civilian populations have grown and traffic congestion has increased. Citizens have suggested that the military should contribute to the funding of improvements to the local transportation system needed for increased civilian need. Such funding would require a change in federal policy with authorization of categorical funds for local transportation improvements.

CURRENT POLICIES AND REGULATIONS

Fort Lewis Entrance Gate Redesign Study: In 1986, Fort Lewis contracted with the U.S. Army Corps of Engineers to develop the Entrance Gate Redesign Study. This study acknowledged a congestion problem at four entrances; Main Gate, North Gate, MAMC Gate, and DuPont Gate. This study recommends several design changes that would lessen congestion and queues at the gates. Recommended design changes include:

Relocate entrance gates and guardhouses further into the installation as much as possible to increase queuing distances from Interstate 5.

Provide additional approach lanes to each gate to increase available vehicle waiting areas, where topography and existing site conditions permit.

Construct a new guardhouse which protects guards and improve gate operation features.

Provide access control features such as curbed traffic islands, jersey barriers in the median strip, automatic traffic control gates, and guard posts. Perimeter fencing and new swinging gates to meet a new entry location.

Design temporary barriers into each gate plan when increased security is needed.⁷

Congress has not appropriated funds for these improvements. As noted above, expenditures for road or other physical improvements require the specific authorization of Congress.

Where the need for improvements due to changes in the surrounding area reach critical stage, installation or post closures are often considered. The consolidation of military

⁷Entrance Gate Redesign Study, Fort Lewis Wa., Corps of Engineers, 1986.

installations has tended to relocate troops to installations where fewer conflicts are likely to occur and expenditures are less to remove problems with neighboring areas.

ANALYSIS

The recommendations made in the Fort Lewis 1986 redesign study have not been implemented. Although the information in Tables 4.22 and 4.23 are being used here only to establish a baseline, they do indicate a serious traffic congestion problem existed at Fort Lewis in 1986, and probably before. With the civilian population increases in both Pierce and Thurston Counties, and with the anticipated increase of approximately 12,000 active duty personnel from Fort Ord and Europe within the next two and a half years, it is reasonable to anticipate that gate congestion will become worse at both military installations.

The public sector can assist in abating some of this vehicle congestion at the military installation gates by making design improvements to the county and federal road system by creating special lanes for vehicle storage during peak traffic hours, and other times of congestion.

McChord AFB has little current data regarding traffic congestion and vehicular delays. If a long term gate traffic solution is to be found for both military installations, additional information will need to be developed.

ALTERNATIVES

- a. Synchronize traffic lights to give priority to entering and leaving vehicles during rush hours.
- b. Close gates during peak civilian traffic hours except for high occupancy vehicles.
- c. Reconfigure all military gates in order to separate visitor traffic from other entry traffic.
- d. Close the East Gate to McChord AFB or have the access restricted to multi-occupant vehicles only.
- e. Increase military police manpower to open additional gates to military installations.
- f. Use a new cross-base arterial to exit/enter military installations.
- g. Maintain gate counts and levels of service.

- h. Department of Defense funds improvements to installation gates.
- i. Develop lanes for traffic merging onto Military Road South west of Spanaway Loop Rd.
- j. Install traffic signals that assist in metering traffic to and from both military installations.
- k. Redesign freeway interchanges to reduce the effect of gate congestion on the regional transportation system.
- l. Fort Lewis should actively pursue recommendations from the 1986 Redesign Study.
- m. Enlarge parking areas for visitors seeking passes.
- n. Local governments and military installations should cooperate to design and implement transportation systems management programs to reduce traffic generated by the installations.

RECOMMENDATIONS

- 1. As freeway interchanges are improved, they should be redesigned to reduce congestion resulting from installation access control.
- 2. Local governments and the military should jointly consider solutions to gate congestion that enhance the flow of traffic to and from the installations.

Issue #4: Gates and Road Closures

DESCRIPTION

Roads on military installation property are generally owned by the federal government. As such they are intended for the sole use of the installation and military purposes. Civilians have enjoyed unrestricted access on some roads on Fort Lewis and McChord AFB. The use of federal roads has been permitted until the time when national security or installation security issues argue for closing the access. Installation security may include protecting on-base housing areas from traffic and other disruptive activities of civilians. Where criminal activities or misuse of access privileges occurs, installations have a responsibility to close roads or increase monitoring at gates. Increasing security at gates requires assignment of personnel and may not be possible given existing funding levels.

Neighbors and areas served by military roads count on the benefits that continued use provides. Over time people grow to rely on passer-by traffic to provide clientele for

local business. Fire stations and police units are located with continued access in mind. Military reservations can prevent direct or straight access from one urban area to another. Citizens grow accustomed to the short cuts that installation roads provide. Moreover, local governments make land use decisions on the basis of continued use of these routes. Multifamily housing and commercial enterprises are permitted.

When roads or gates are closed, civilians can be affected. Response times for police and fire departments can be substantially increased. Getting to and from home can become much more time-consuming and frustrating for civilians as well as installation personnel.

CURRENT POLICIES AND REGULATIONS

No policies or regulations in regard to road or gate closures have been identified.

ANALYSIS

Policy on how military installations will mitigate adverse effects of road and gate closures on civilian neighborhoods and public service delivery may not make road closures less controversial. However, they can provide a basis for public information that informs civilians using installation roads of what they can expect. As with any use of public property, an individual's use of the property is a privilege and not a right. When a yard is extended into a public right-of-way, use may be permitted. But when the road must be improved, the allowed use may have to be removed. Being advised of an expectation of road closure would let communities know in advance of likely closures.

Mitigation of impact is often possible. Fire protection can be provided by the military installation. Mutual aid agreements can be executed that get the closest fire or police or other emergency service provider to the scene. Early public notice of closure and an information program on the options available to citizens can ease anxiety and facilitate change. Citizens can be helpful in identifying possible solutions or ways of reducing the effects of closures.

Local governments can assist the military installations by planning for land use and establishing land use regulations on the assumption that installation roads may not be open at some point. Public facilities and service delivery systems can be developed with only the civilian transportation network in mind. When closures are necessary, local governments can facilitate a change that is considerate of the needs of affected citizens and the mission of the installations. Assistance can come in the form of providing public meetings, working with citizens to identify solutions to problems created from the closure, and otherwise seeking compromises that all sides can live with.

ALTERNATIVES

- a. Initiate a public information campaign aimed at advising communities around the military installations of security needs and mandates and how civilians may be affected.
- b. Establish a policy of using citizen collaboration to develop mitigation plans when road or gate closures are needed.
- c. Plan land uses on the basis of the civilian transportation network.
- d. Plan the civilian transportation network to meet the access needs of pockets of civilians otherwise relying on military installation roads.
- e. Design public services and especially emergency services to emphasize mutual aid to deliver the same level of service as provided other residents of the jurisdiction in neighboring areas.

RECOMMENDATIONS

1. The military should use public information programs to inform citizens near the installations how the military security requirements can effect roads.
2. Local governments should plan public services, transportation, land use, and other decisions on the ability of the public transportation network to meet access needs without depending on military roads.
3. Local governments and the military should cooperate on the development of mitigation plans for military road closures that affect public use.

SECTION G - GROWTH MANAGEMENT

Development associated with the population growth in the Puget Sound region is encroaching on the borders of McChord Air Force Base and Fort Lewis. This growth could worsen compatibility between civilian land uses and daily military operations.

Issue #1: Growth Management and Coordination of Land Use

DESCRIPTION

Puget Sound communities along the I-5 corridor have experienced a high amount of residential, commercial and industrial growth in the past few years. Projected population estimates indicate a continued increase in Pierce County and Thurston County populations. A new Boeing aircraft manufacturing plant in Pierce County is estimated to directly stimulate 28,542 person increase in population. If successful the Northwest Landing Planned Unit Development in DuPont will increase the town's population from 495 people in 1991 to approximately 15,000 people in thirty to forty years. This population and associated land development can affect the ability of the installations to accomplish their missions and be good neighbors.

The population of military personnel on the installations is also projected to increase. The total military personnel stationed at the two military installations have varied in the past two years due to the deactivation of the 9th Infantry Division at Fort Lewis. Additionally, if approved by Congress, the 7th Infantry Division from California will be transferred to Fort Lewis later in the year. By 1995, it is projected that Fort Lewis and McChord have a total of 32,500 military personnel, an increase from 23,272 personnel in 1990.

As growth occurs in surrounding communities and on the installations, there will be increasing benefit in collaborating on the resolution of mutual planning issues. Development impacts are already evident as the continued growth pattern in Pierce County and Thurston County slowly encroaches on the borders of the military reservations. Depending on the type of development, various safety and noise issues arise. Accidents associated with aircraft and artillery training maneuvers can harm civilians living and working adjacent to certain sections of the installations. Also, normal aircraft flights creates a noise level which inhibits speech communication necessary for some commercial businesses, professional offices and educational facilities.

To address issues of future development and population growth, counties and cities have recognized the need for land use planning. The majority of the cities and unincorporated communities in Pierce County and Thurston County developed comprehensive plans and development regulations and update them periodically. However, developmental impacts cross jurisdictional boundaries.

In 1990 and 1991, the Washington State Legislature took a regional planning approach to address the issue of impacts across jurisdictional boundaries. The Growth Management Act requires neighboring cities and counties to coordinate their development planning

efforts. Although the Act cannot require military participation in the development of land use provisions, incorporated and unincorporated communities in the county need to plan for the continued military presence and its mission.

CURRENT POLICIES AND REGULATIONS

Military: The Air Force's Air Installation Compatible Use Zone (AICUZ) and Army's Installation Compatible Use Zone (ICUZ) studies acknowledge the necessity to coordinate with jurisdictions adjacent to Air Force and Army installations.

The McChord AICUZ study states that, "It is the Air Force policy to work toward achieving compatibility between air installations and neighboring civilian communities by means of a compatible land use planning control process conducted by the local community."

The Fort Lewis ICUZ study states that, "It is the Army's policy to work toward achieving compatibility between installations and neighboring civilian communities by means of compatible land use planning and control process conducted by the local community. In this capacity, the Army may serve as a technical resource to the community upon appropriate request."

These studies serve as the basis for land use compatibility between the military and surrounding jurisdictions. They identify noise contours and accident potential areas on and surrounding the base. Using the results from the investigation, the military prepares recommendations for the surrounding communities toward minimizing off-installation impact and to encourage sound land use compatibility management practices.

The Army and Air Force commanders also establish and maintain educational programs informing local governments and citizens when the military initiates planning on the military installation.

An objective of the Installation Management goal in the Fort Lewis Vision Statement proclaims that, "Fort Lewis will be proactively involved in state and local planning to provide mutual support, anticipate environmental issues/concerns and protect the installation from encroachment." Another objective under the same goal states that Fort Lewis will, "...work with local housing sources/officials to increase the availability of adequate off-post housing for soldiers and families."

Installation representatives have been active in various local civilian planning projects which affect the military installations, such as a utility committee in DuPont, the Growth Management Coordinating Committee for Pierce County and the Pierce County Transportation Coordinating Committee. However, these representatives are civilians and serve only in a technical assistance capacity. As civilians, they can only act as spokesperson for the military when authorized on any issue. Recommendations from

civil service personnel does carry weight at the military command level. Many decisions, however, are made at DOD level.

Civilian: Although the military installations occupy approximately 6 percent of the land in Pierce County and Thurston County, very few local policy statements are directly focused on land use coordination with the military installations. However, several local policies direct coordination with "affected" agencies or jurisdictions. Local officials can consider the military installations as one of these organizations for land use, environmental or other planning purposes.

State of Washington - Environmental Policy Act: The State Environmental Policy Act (SEPA) insures consideration of impacts on the environment by proposed development or regulations. Certain governmental actions, including some development permits, require environmental checklists. The checklist outlines impacts of the action to natural and social environments. Checklist are distributed to affected agencies for identification of impacts to their plans or facilities. A threshold determination is decided by the local official as to whether or not the action will have a significantly adverse impact on the site or surrounding area. After the determination is made, it is distributed to agencies which might be affected.

The Pierce County Planning and Land Services Department follows the procedures outlined in "Pierce County SEPA Review Procedures guidebook." It lists maps which should be consulted to determine if there are any special environmental conditions on the proposed development site. The AICUZ and ICUZ studies are not included in this list because they were not adopted as substantive authority in the Pierce County Environmental Regulations.

State of Washington - Growth Management Act: The Growth Management Act has the following provisions of interest to the study:

36.70A.210 (4) RCW, Federal agencies and Indian tribes may participate in and cooperate with the county-wide planning policy adoption process.

47.80.040 RCW, Each regional transportation planning organization shall create a transportation policy board. Transportation policy boards shall provide advice to the regional transportation planning organization and shall allow representatives of major employers within the region, the Department of Transportation, transit districts, port districts, and member cities, towns, and counties within the region to participate in policy making.

As a major employer in Pierce County, the regional RTPPO could ask the military for a representative.

Pierce County - Community Plans: Pierce County has several community plans for unincorporated communities which includes but are not limited to Parkland/Spanaway, Lakewood, Summit/Waller, Gig Harbor, University Place, North Hill and the Key

Peninsula. The majority of these plans include policies urging coordination. The planning area boundaries for Lakewood and Parkland/Spanaway are adjacent to the military reservations.

Pierce County - Lakewood Community Plan: The plan proposes the following policies:

Community Identity Element:

Maintain and foster the existing character and identity of Lakewood as a sub-urban, family-oriented community.

Objective B: *Ensure the policies of this plan are supported by adjoining and nearby jurisdictions, through interlocal agreements, especially in the event of annexation of a portion of the community.*

Land Use Element goal:

Ensure that the location, pattern and relationship of the varied land uses within the plan area are mutually consistent and compatible with each other.

Objective D: *Citizens and affected agencies should be involved in all phases of comprehensive plan development, revision, evaluation and update.*

Natural Resources/Environment - Noise goal:

Protect Lakewood's environment by reducing or eliminating sources of noise.

Objective B: *Pierce County should support joint land use planning efforts with both McChord Air Force Base and Fort Lewis to strive to limit and reduce noise issues surrounding those installations.*

Policy 1: *Support continued use of McChord Air Force Base airport for military air transportation only.*

Policy 2: *Pierce County should investigate the recommendations of the ICUZ and AICUZ studies for incorporation into the County's Comprehensive Land Use Plan.*

Policy 3: *Future updates of the Lakewood Community Plan should incorporate any adopted county-wide policies that stem from the ICUZ and AICUZ reports and recommendations from the Joint Land Use Plan.*

Pierce County - Parkland/Spanaway Community Plan: The plan contains the following goals and policies pertaining to the coordination with the military installations:

Community Coordination Element Goal:

To provide the general framework for the county, local citizens and business community to communicate, review, recommend and implement the Parkland/Spanaway Comprehensive Land Use Plan.

Policy P1.010: *A committee representing broad interests and geographical areas shall be established to periodically review the plan and its effectiveness.*

Pierce County - Interim Growth Management Policies: Pierce County officials adopted Interim Growth Management Policies to help guide development while the update the county's comprehensive plan is being prepared. The goals and objectives in the document relevant to land use coordination are as follows:

Objective 1:

Involve citizens, affected agencies and tribes in all phases of developing, revising, evaluating, and updating land use policies.

Objective 14:

Work with neighboring counties, other jurisdictions, tribes, and special districts to find solutions to regional problems and issues.

Objective 15:

Coordinate land use actions between the military and civilian communities.

The Facilities and Services section of the policies also provides guidance to the County regarding air transportation and land use compatibility. The Policies address educational programs and restriction of certain types of development adjacent to airports. A detailed discussion is provided in Section B and C of this study.

Pierce County - Transportation Plan Policy Document: The Pierce County Transportation Plan Policy Document contains various general policies for coordination, land use compatibility, and preservation of airport resources which support working closely with the installations.

A coordination goal of the Transportation Plan Policy Document states "...promotes effective coordination between and among governments, private enterprise and the community." The supporting Agency Coordination policy relays a manner of implementation ensuring successful coordination.

Agency Coordination Policy: *Pierce County actively coordinates its planning, construction, and operation of transportation facilities and programs to support and complement the planning functions of adjacent counties, local jurisdictions, the Puget Sound Council of Governments [Puget Sound Regional Council], the Washington State Department of Transportation, Pierce Transit, and other public and private*

entities responsible for transportation facilities and services that may affect Pierce County.

The Land Use and Transportation Planning goal is, "...to ensure compatibility between transportation facilities and surrounding development." Associated policy, detailed in Section B, supports the formation of airport overlay zones, coordinated with all affected parties, which incorporate the compatible use districts outlined in the McChord AICUZ study.

City of Tacoma - Generalized Land Use Plan: The Tacoma Generalized Land Use Plan provides the following policies relating to intergovernmental coordination:

Intergovernmental Coordination Policy: Manage growth and development in an orderly and desirable manner consistent with the expressed goals of the City, local governmental jurisdictions, regional and federal agencies and the State of Washington.

Thurston County - Comprehensive Plan: The Thurston County Comprehensive Plan provides the following goals, objectives and policies related to intergovernmental cooperation:

Land Use Decision Goal:

Land use planning and decision making should ensure the highest degree of public health, safety, and general welfare within a quality living environment without unduly jeopardizing the rights of the individual.

Objective D: *Systems to promote and ensure intergovernmental awareness and cooperation on county-wide goals should be instituted and maintained.*

Policy 2: *Land use decisions involving county lands adjacent to other jurisdictions should take into consideration the current land use and long-range goals of the neighboring jurisdictions. A mechanism should be established to coordinate land use decision making among the jurisdictions along their common boundaries.*

Thurston County - Nisqually Sub-Area Plan: The Nisqually Plan provides the following goals and policy related to intergovernmental cooperation:

Intergovernmental Cooperation Goal:

Enhance intergovernmental cooperation between tribal, federal, state, and adjacent local governments in implementing the Nisqually Plan and other related land use programs.

Policy L.3: *Encourage Pierce County, DuPont and Fort Lewis to develop land use plan which are consistent with the spirit and letter of the Nisqually Plan.*

ANALYSIS

The military continues to express a need for adjacent local governments to acknowledge military land uses in local and regional land use planning. Military policies urge coordination with local jurisdiction to obtain compatible land uses around the installations.

Personnel from the military installations participate on various civilian technical committees. As a representative in this capacity, they can present the agency's position only after discussing the issue with their uniformed superior. High ranking military personnel are not able to attend the majority of local land use review committee meetings due to time constraints.

Military reservations and local jurisdictions have been compelled by citizen pressure to work together to solve specific problems. Problems occur because local governments and community members have recognized the conflict between certain types of land uses next to the installations and the military operations, but have failed to implement appropriate land use provisions. This is evident by the lack of land use policy and regulation directed towards property surrounding the installations.

ALTERNATIVES

- a. Increase coordination of growth issues among military and civilian planners.
- b. Civilian land use plans and policies include separate sections for the land use development issues affecting or being effected by the military. (Similar to downtown comprehensive plan elements)
- c. Local plans and regulations include military chapters developed with priority similar to downtown or industrial development elements.
- d. Military leaders become active and visible participant in all local growth management planning and decisions.
- e. The military compiles and provides reliable statistical data to civilian planners for making decisions.

RECOMMENDATIONS

1. Local governments should strongly consider the military installations as an affected agency for land use planning decisions.
2. Local governments should invite the military to participate as members on growth management committees.

3. Local governments should provide opportunities for the military to participate in local and regional planning issues and programs.
4. The military should actively participate in local growth management committees and programs.
5. The military installations and local governments should establish periodic meetings of elected local, state and federal officials and military commanders on growth management issues of mutual concern.
6. The military should consistently provide statistical data to civilian planners for developing land use, housing, and transportation plans.
7. A standing review committee, comprised of representatives from Joint Land Use Study participating jurisdictions, should be formed to meet and be briefed on major development proposals and environmental concerns on and off the installations.
8. Environmental policies adopted by the military should continue to reinforce the environmental policies of surrounding jurisdictions.
9. Comprehensive Plan policies adopted by local governments pertaining to environmental issues, should agree with and not degrade the environmental policies of the military installations.
10. The military and local jurisdictions should develop and adopt programs to encourage preservation of natural vegetation for aesthetic and noise attenuation purposes.

Issue #2: Sea-Tac Auxiliary Airport

DESCRIPTION

Flight operations at the Seattle-Tacoma International Airport (Sea-Tac) are approaching capacity. In an effort to explore how to accommodate the growth of this region's international and domestic air operations, a study is underway to identify and recommend locate possible supplemental or replacement airports.

The Puget Sound Air Transportation Committee (PSTAC) has guided the study and developed recommendations. Consultants supplied runway requirements and site location criteria for locating an airport. Using these criteria, Committee staff and consultants initially identified nine existing airports and five new search areas located in the Puget Sound area. These sites have been narrowed down to three recommended sites. The draft study indicates that the suggested supplemental airport should focus on

the origin and destination traffic of local residents. This focus would not anticipate connecting flights at Sea-Tac.⁸

The Committee evaluated various options for the location of supplemental airports. On December 4, 1991, the Puget Sound Air Transportation Committee made its draft recommendation on the solution for Sea-Tac congestion. The Committee's recommendation is for a multiple airport system of three parts. The three parts would include the expansion of Sea-Tac with two supplemental airports; one at Paine Field in Everett, the other to be located at either Ft. Lewis or McChord, in Thurston County, or east of Ft. Lewis. The three-part multiple airport system has been recommended over (a) a multiple airport system with only one supplemental airport, or (b) a replacement airport, with dismantling of Sea-Tac, or (c) total reliance on Sea-Tac with a demand management system.

The PSTAC study is described as a system level decision, and includes a non-project environmental impact statement. Subsequent siting and project level environmental review would address site specific issues and questions.

Issues linked with joint military-civilian use of McChord AFB, Gray Army Airfield and Fort Lewis/Spanaway area include:

Possible expansion of the 65 Ldn Noise Contour;
Conflict with military mission and operations.

CURRENT POLICIES AND REGULATIONS

Military: Military Policy related to joint use of a military installation does not exist. However, through written correspondence, Fort Lewis has formally informed the Air Transportation Committee that military sites should be removed from the list of possible location. McChord AFB cannot consider a joint civilian project officially until a formal proposal is submitted. However, McChord AFB has commented that joint use of United States Air Force installations will be considered only if there will be no compromise of military response, security, readiness or safety.

Pierce County: The Sea-Tac replacement or supplemental airport is a region-wide issue. As required by the Growth Management Act, Pierce County has a new responsibility to address issues of this nature through county-wide and multi county-wide policies.

The Lakewood Community Plan supports, "continued use of McChord airport for military air transportation only."

⁸Correspondence from Peter Beaulieu, Puget Sound Regional Council

ANALYSIS

Joint military and civilian use of McChord Air Force Base or Fort Lewis has potential to produce negative consequences to both the surrounding civilian population and the military installations. An extensive redesign of military air and ground operations would have to occur. This redesign of operations could hinder the ability of the respective installations to fulfill their missions. Also, existing land use and noise conflicts around the military installation would be increased.

The redesign of McChord AFB, proposed by the Committee to meet the requirements of an commercial airport, would eliminate on-ground military facilities. Land would not be available for necessary facilities such as explosive ordnance disposal sites, contingency aircraft parking, and wing tank and parachute drop zones within the installation.

The proposed redesign also would reduce airspace needed for military operations. Unlike the majority of commercial airports, a substantial portion (65%) of McChord AFB operations are not full stop landings. Aircraft training requires crews to spend a great deal of time in the flight pattern practicing instrument approaches/departures and pattern work near the field (touch & go's).

Fort Lewis also requires restricted airspace for tactical close air operations, artillery fire and parachute exercises. Artillery fire must reach certain elevations to avoid skipping above the terrain and exploding in unpredictable areas. The displacement of military land for a civilian airport and the reduction of open airspace above Fort Lewis would restrict the amount of available land for training maneuvers.

Commercial air operations at Fort Lewis or McChord AFB would increase the type and frequency of aircraft landing and departing at military airstrips. The additional flights have potential to expand 65 Ldn noise contours. More land uses and people would be exposed to noise levels.

ALTERNATIVES

- a. Support location of a new airport in the Parkland/Spanaway area.
- b. Discourage location of a new airport in the Parkland/Spanaway area.
- c. Support joint use of McChord AFB as a supplemental airport.
- d. Oppose joint use of McChord AFB as a supplemental airport.

RECOMMENDATIONS

1. Local governments should oppose future use of military facilities for a commercial airport.

SECTION H - COMMUNICATION

The close proximity of civilian homes and businesses to military activities and housing has resulted in some conflicts over the past 74 years. Since the military has proven to be a constant in Pierce and Thurston Counties, opportunities to increase communication lines between the military and local residents, communities, and local governments should be explored.

Issue #1: Collaboration between military and local residents, communities, and local governments on issues of mutual interest

DESCRIPTION

The actions of residents around the installations affect the ability of the Air Force, Army, and National Guard to conduct field training exercises and otherwise meet defense objectives. Residents desire a voice in military decisions which affect them. Moreover, both military and residents expressed concerns regarding illegal activities and land use conflicts surrounding the military reservations. Improved communication has been identified as a crucial step in resolving misunderstandings and averting conflicts. There are no formally adopted procedures which guide communities and the military installations to work together to reach solutions to conflicts.

The present avenue for communication between residents and the local communities and the military is informal. Individuals with complaints are encouraged to telephone the Public Affairs Community Relations division. Incidents are checked out by staff and responded to quickly by telephone. Training schedules are published and information is provided about installation activities via press releases in local newspapers including the official McChord and Fort Lewis newspapers.

Local governments provide notice to the military of impending land use actions in surrounding neighborhoods. Military hold positions on local boards, such as the Chamber of Commerce, and represent military interests and policy on State and local issues. Recently, studies like the Joint Land Use Study have created new avenues for sharing information, ideas and concerns.

CURRENT POLICIES AND REGULATIONS

Complaints and comments regarding military activities are submitted to the Public Affairs Offices on the installations. The procedure for complaints is as follows:

1. Complaints are researched by the Community Relations Office for accuracy.
2. Information regarding the incident is sent to the responsible unit, Chief of Staff, and if applicable the Claims Department.

3. Community Relations Office provides a rapid response, usually verbal, to the person who filed the complaint to inform them of the military's findings

The amount of community involvement in the activities and decisions of the installation is left to the discretion of the installation commanders and their staff.

ANALYSIS

The military installations have expressed interest in informing residents of military needs and objectives to help local residents and business understand their operations, needs and constraints better. The military installations consider themselves to be part of the community. Its personnel live in the economy; children attend public schools off-base; personnel take active roles in community affairs. Residents desire a medium for participating in military decision making processes on issues which affect them. The current desire to increase communication with one another has created an opportunity for increased understanding.

The development of consistent standards for transmitting information "to and from" the military "to and from" the different community levels (residents, neighborhoods, and local government) can reduce frustration on both sides. Once information is transmitted freely between concerned parties, solutions can be reached. Compromises should be developed which still meet the military's objectives but minimize conflicts with residents. The current communication lines which exist between counties, communities, and neighbors should be expanded to include the military installations.

ALTERNATIVES

- a. The military establishes a communication network for rapid and early spread of information before artillery activity or changes in operations.
- b. Improve the process for receipt of incoming complaint calls.

RECOMMENDATIONS

1. The military should expand their existing public information program to include the following methods of informing local residents and receiving their comments:
 - a. submit articles to local newspapers;
 - b. submit information for display on "public access" television channel;
 - c. conduct periodic surveys for public opinion;
 - d. provide information boards;
 - e. provide comment forms for citizen's complaints;
 - f. explore extending Fort Lewis cable channel to adjacent communities.

2. **Encourage local news media to place a higher priority on routine military functions that have an impact on the surrounding communities and land uses.**
3. **The Yelm Chamber of Commerce is encouraged to form a "military affairs committees" to aid in the communication and public awareness of Fort Lewis range activities and schedules.**

CHAPTER 5

IMPLEMENTATION STRATEGIES

Participating jurisdictions at the initiation of the Joint Land Use Study (JLUS) agreed to review and take the recommendations through their respective legislative processes. This approach recognized the requirement of individual agencies to deliberate and weigh the recommendations independently. Nevertheless, the effectiveness of the JLUS depends upon the extent to which participating jurisdictions implement its recommendations.

The purpose of offering implementation strategies is to outline the actions needed to execute JLUS recommendations. Implementation actions should be undertaken in a timely manner to address identified joint land use concerns.

Participants in the Joint Land Use Study include various local, regional, federal and sovereign governments. It should be noted that the implementation strategies for the JLUS are not intended to commit the participating jurisdictions to specific courses of action. Each jurisdictions will follow their own internal and legislative procedures for the adoption of policy and regulations. Local government procedures depend in part upon the statutory authority granted to them by the State of Washington. The procedures of the federal government are determined in part by Congress. The Nisqually Indian Tribe is a sovereign government that adopts its own land use policies.

Implementation strategies as suggested include both long-range and short-range approaches. Long-range strategies are offered to incorporate the JLUS recommendations in the comprehensive plan updates with subsequent regulatory changes. Short-range strategies suggest ways of addressing the gap between issuance of the JLUS and the adoption and implementation of comprehensive plan updates. An additional strategy involves good public information and education for military personnel, local and regional elected officials, the business community and affected residents.

After the participating jurisdictions implement the appropriate recommendations, periodic monitoring of land development activities and patterns should occur. Monitoring should include examination of development and building permits for incompatible development, as identified in the JLUS. If the initial implementation strategies fail to meet the goals of the individual entities, other methods of implementation should be investigated. To address the needs of each participating jurisdiction, implementation strategies for each jurisdiction are as follows:

PIERCE COUNTY

- o Adopt a resolution to integrate appropriate JLUS recommendations into the Comprehensive Plan Update for Pierce County.

Chapter 5

Implementation Strategies

- Amend the environmental regulations to:
 - 1) Adopt the JLUS recommendations as Substantive Authority under SEPA. If this is done, JLUS recommendations can be used in threshold determinations and mitigation conditions.
 - 2) Identify the area within the 65 Ldn noise contour as a "aircraft noise sensitive area" and the accident potential zones as "aircraft accident potential zones."
- Amend administrative procedures for environmental review to actively solicit comment from the military installations on development proposals within the Joint Land Use Study area prior to making a threshold determination.
- On behalf of all participating jurisdictions, send copy of the Joint Land Use Study to the Congressional/Legislative delegations within the JLUS area with a request to implement acquisition of the Clear Zone and other applicable recommendations without delay.
- Review the State Open Space Tax laws, and amend the local program as appropriate, to support qualified properties within the Clear Zone.
- Develop public information fact sheets (as model program) for citizens and Chambers of Commerce on accident potential, aircraft noise, artillery noise, the areas associated with these impacts, and construction techniques for noise reduction.
- Investigate integrating aircraft noise attenuation into existing housing assistance programs for dwellings within the 65 Ldn noise contour.
- Serve as lead agency for the Joint Land Use Study Standing Review Committee.

CITY OF TACOMA

- Adopt a resolution to integrate appropriate JLUS recommendations into the Comprehensive Plan Update for the City of Tacoma.
- Amend the environmental regulations to:
 - 1) Adopt the JLUS recommendations as Substantive Authority under SEPA. If this is done, JLUS recommendations can be used in threshold determinations and mitigation conditions.
 - 2) Identify the area within the 65 Ldn noise contour as a "aircraft noise sensitive area" and the accident potential zones as "aircraft accident potential zones."
- Amend administrative procedures for environmental review to actively solicit comment from the military installations on development proposals within the Joint Land Use Study area prior to making a threshold determination.
- Investigate integrating aircraft noise attenuation into existing housing assistance programs within the 65 Ldn noise contour.

TOWN OF STEILACOOM

- Adopt a resolution to integrate appropriate JLUS recommendations into the Comprehensive Plan Update for the City of Steilacoom.
- Amend the environmental regulations to adopt the JLUS recommendations as Substantive Authority under SEPA.
- Amend administrative procedures for environmental review to actively solicit comment from the military installations on development proposals within the Joint Land Use Study area prior to making a threshold determination.

CITY OF DUPONT

- Adopt a resolution to integrate appropriate JLUS recommendations into the Comprehensive Plan Update for the City of DuPont.
- Amend the environmental regulations to adopt the JLUS recommendations as Substantive Authority under SEPA.
- Amend administrative procedures for environmental review to actively solicit comment from the military installations on development proposals within the Joint Land Use Study area prior to making a threshold determination.

CITY OF ROY

- Adopt a resolution to integrate appropriate JLUS recommendations into the Comprehensive Plan Update for the City of Roy.
- Amend the environmental regulations to adopt the JLUS recommendations as Substantive Authority under SEPA.
- Amend administrative procedures for environmental review to actively solicit comment from the military installations on development proposals within the Joint Land Use Study area prior to making a threshold determination.

THURSTON COUNTY

- Adopt a resolution to integrate appropriate JLUS recommendations into next appropriate Comprehensive Plan update for Thurston County.
- Adopt area of Noise Zone II (NZII) as a "noise sensitive" area per Joint Land Use Study recommendations.

Chapter 5

Implementation Strategies

- Amend administrative procedures for environmental review to actively solicit comment from the military installations on development proposals within the Joint Land Use Study area prior to making a threshold determination.

CITY OF YELM

- Adopt a resolution to integrate appropriate JLUS recommendations into the Comprehensive Plan Update for the City of Yelm.
- Amend the environmental regulations to adopt the JLUS recommendations as Substantive Authority under SEPA.
- Amend administrative procedures for environmental review to actively solicit comment from the military installations on development proposals within the Joint Land Use Study area prior to making a threshold determination.

CITY OF RAINIER

- Adopt a resolution to integrate appropriate JLUS recommendations into the Comprehensive Plan Update for the City of Rainier.
- Amend the environmental regulations to adopt the JLUS recommendations as Substantive Authority under SEPA.
- Amend administrative procedures for environmental review to actively solicit comment from the military installations on development proposals within the Joint Land Use Study area prior to making a threshold determination.

CITY OF LACEY

- Adopt a resolution to integrate appropriate JLUS recommendations into the Comprehensive Plan Update for the City of Lacey.
- Amend the environmental regulations to adopt the JLUS recommendations as Substantive Authority under SEPA.
- Amend administrative procedures for environmental review to actively solicit comment from the military installations on development proposals within the Joint Land Use Study area prior to making a threshold determination.

NISQUALLY INDIAN TRIBE

- Adopt a resolution to integrate appropriate JLUS recommendations into the tribal reservation comprehensive plan Update for the Nisqually Indian Tribe.
- Amend the environmental standards to adopt the JLUS recommendations as Substantive Authority under NEPA.

CHAMBERS OF COMMERCE/BUSINESS COMMUNITY

- Encourage businesses and business organizations to consider the applicable Joint Land Use Study recommendations.
- Develop and promote a voluntary program to remove land use conflicts within the Accident Potential Zones.
- Support the adoption of comprehensive plan policies and land use regulations that implement Joint Land Use Study recommendations.
- Encourage the use of disclosure statements in real estate rental and purchase agreements.
- Puget Power and other utilities should work to eliminate all above-ground transmission lines within the Clear Zone.
- Yelm Chamber of Commerce should form a military affairs committee.

FORT LEWIS

- Endorse the findings of the Joint Land Use Study.
- Implement applicable recommendations consistent with operational requirements, and fiscal constraints and amend local operational rules and procedures accordingly.
- Cooperate with local governments to develop transportation demand management programs.
- Actively participate in local growth management committees and programs
- Distribute information on accident potential zones, noise sensitive areas, and mission and operational changes, which affect the adjacent jurisdictions.

MCCHORD AIR FORCE BASE

- Endorse the findings of the Joint Land Use Study.
- Implement applicable recommendations which are consistent with operational requirements and fiscal constraints and amend local operational rules and procedures accordingly.
- Cooperate with local governments to develop transportation demand management programs.
- Actively participate in local growth management committees and programs
- Distribute information on accident potential zones, noise sensitive areas, and mission and operational changes, which affect the adjacent jurisdictions.

CAMP MURRAY - WASHINGTON NATIONAL GUARD

- Endorse the findings of the Joint Land Use Study.
- Implement applicable recommendations which are consistent with operational requirements and fiscal constraints and amend local operational rules and procedures accordingly.
- Cooperate with local governments to develop transportation demand management programs.
- Actively participate in local growth management committees and programs
- Distribute information on accident potential zones, noise sensitive areas, and mission and operational changes, which affect the adjacent jurisdictions.

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APPENDIX A

MODEL ADOPTION RESOLUTION

1 MODEL RESOLUTION NO. _____

2 A RESOLUTION of the (City, County or Tribe) (adopting/accepting/endorsing) the
3 Joint Land Use Study (JLUS).

4 WHEREAS, the Joint Land Use Study is the result of a collaborative planning
5 effort involving the military installations of Fort Lewis, McChord Air Force Base and
6 Camp Murray (Washington National Guard) and the surrounding local governments of
7 Thurston and Pierce Counties, Cities of Rainier, Yelm, DuPont, Steilacoom, Tacoma,
8 Roy, and Nisqually Indian Tribe; and

9 WHEREAS, the goal of the Joint Land Use Study is to encourage compatible
10 development and redevelopment in each affected jurisdiction that balances sustaining the
11 local military missions with the long-term community land use needs; and

12 WHEREAS, participating jurisdictions provided letters of support and
13 concurrence to initiate study and pursue implementation of the final recommendations;
14 and

15 WHEREAS, Pierce County was selected by participants to serve as lead agency
16 for contractual and environmental review; and

17 WHEREAS, each jurisdiction agreed to participate in development of the study
18 and to provide representatives to the Citizen Advisory Committee and Technical
19 Advisory Committee; and

20 WHEREAS, the Citizen Review Committee and Technical Review Committee
21 conducted five (5) workshops in Spring 1991 to identify citizen concerns and preferences;
22 and

23 WHEREAS, an the Pierce County Planning and Land Services in conjunction
24 with the Citizen Review Committee (CRC) and the Technical Review Committee (TRC)
25 made recommendations which, when implemented, will help create an environment
26 conducive to continuing operations at the military installations; and

WHEREAS, the Citizen Review Committee and Technical Review Committee held five (5) community workshops in Spanaway, Steilacoom, Yelm, South Tacoma and Fort Lewis in January 1992 to receive public comment regarding the Draft Study; and

WHEREAS, the Responsible Official reviewed environmental documents and issued a Mitigated Declaration of Nonsignificance (MDNS) on December 24, 1991 and the MDNS became final January 9, 1991; and

WHEREAS, the Citizen Review Committee and the Technical Review Committee issued a final Draft on March 1, 1992; and

WHEREAS, the (Council or Commission) held a public hearing on _____ where oral and written testimony was considered; NOW, THEREFORE,

BE IT RESOLVED by the (Council or Commission) of the (City, County or Tribe):

Section 1. The (City, County or Tribe) hereby (adopts/accepts/endorse) the Joint Land Use Study as shown on Exhibit "A" attached hereto and by reference incorporated herein.

Section 2. The (City, County or Tribe) hereby direct that the recommendations be integrated into the update of the Comprehensive Plan pursuant to the Growth Management Act and when preparing changes to land use and environmental regulations, and other related public programs.

Section 3. This Resolution shall become effective on _____, 1992.

PASSED this _____ day of _____, 1991.

c:\wpfiles\jlus\model.res

APPENDIX B

LETTERS OF CONCURRENCE



Pierce County

Office of the County Executive

930 Tacoma Avenue South, Room 737
Tacoma, Washington 98402
Tel. 206: 591-7477

JOE STORTINI
County Executive

ANDREW NEIDITZ
Deputy County Executive

November 9, 1989

Curtis Smelser, Executive Director
Puget Sound Council of Gov'ts
Grand Central on the Park
216 First Avenue South
Seattle, WA 98104

Dear Mr. Smelser:

At our Tuesday, October 24th meeting, we met in my office to discuss the feasibility of our jurisdictions beginning a Joint Land Use Study in conjunction with local military bases.

Sufficient support among our jurisdictions was apparent. However, additional information was requested such as whether some of the JLUS grant dollars could be passed through the lead agency to other jurisdictions to offset staff costs. Also, it was agreed that Pierce County should continue as the lead agency.

Within the next month, my staff will be preparing a draft document that details expected cost of the JLUS, the process that we'll be following, the expected level of participation and the scope of the study. When that is finished, a copy of the document will be sent to all affected jurisdictions for comment.

Each jurisdiction will then be asked for a letter indicating support for the process and intent of the JLUS, commitment to provide 200-400 hours of in-kind services on a technical committee over the next 2 years and commitment to submit the final report to their respective legislative authority for adoption. This letter is an essential part of the application to secure JLUS dollars.

If you have any questions or comments, please call Planning Director Joe Scorcio at 591-7158.

Sincerely,

JOE STORTINI
Pierce County Executive

JS:dls



Pierce County

Office of the County Executive

930 Tacoma Avenue South, Room 737
Tacoma, Washington 98402
Tel. 206: 591-7477

JOE STORTINI
County Executive

ANDREW NEIDITZ
Deputy County Executive

December 20, 1989

Mayor Elect Karen Vialle
City of Tacoma
747 Market Street
Tacoma, WA 98402

Dear Mayor Elect Vialle:

On Tuesday, October 24th, a meeting took place in my office to discuss the feasibility of our jurisdictions beginning a Joint Land Use Study in conjunction with our local military bases. Since you did not attend, I would like to brief you on what transpired.

Sufficient support among our jurisdictions was apparent and we agreed that Pierce County should continue as the lead agency. However, additional information was requested such as whether some of the JLUS grant dollars can be passed through the lead agency to other jurisdictions to offset staff costs associated with participating on a technical review committee.

On Monday, November 27, I met with Colonel John Gay from the Office of Economic Adjustment, U.S. Department of Defense. The purpose of our meeting was to bring him up to date with our proposed JLUS.

Colonel Gay approved the proposed two year study of broad scope, but he could not fully fund our proposal without delaying other studies. He asked that we scale back to focus initially on those jurisdictions most affected by the military noise and other impacts.

My staff has prepared a draft that details expected costs of the JLUS, the process that we intend to follow, the presumed level of participation and the scope of the study. The revised proposal, requested by the Colonel, provides no pass-through dollars to off-set staff time at the TRC meetings.

Each jurisdiction that intends to participate is being asked for a letter indicating support for the process and intent of the JLUS, commitment to provide in-kind services on a technical review committee over the next 18 months and commitment to submit the final report to their respective legislative authority for adoption. This letter is an essential part of the JLUS.

If you have any questions or comments, please call Planning Director Joe Scorcio at 591-7158.

Sincerely,

A handwritten signature in dark ink, appearing to read "Joe Stortini".

JOE STORTINI
Pierce County Executive

THE PIERCE COUNTY EXECUTIVE SENT THE CORRESPONDENCE DATED
NOVEMBER 9, 1989 AND DECEMBER 20, 1989 TO THE INTERESTED
PARTIES LISTED BELOW.

James R. Gehrke
Mayor of Rainer
P.O. Box 258
Rainer, WA 98576

Curtis Smelser, Executive Director,
PSCOG
Grand Central on the Park
216 First Avenue South
Seattle, WA 98104

Nisqually Tribal Council
4820 She-Nah-Num Drive SE
Olympia, WA 98503

Patty Miller-Krowley
Department of Community Development
State of Washington,
9th and Columbia Bldg, GH-51
Olympia, WA 98504

Kay Boyd
Mayor of Lacey
P.O. Dwr B
Lacey, WA 98503

Doug Sutherland
Mayor of Tacoma
747 Market Street
Tacoma, WA 98402

George Hoivik
Planning Director

Erling Mork
Tacoma City Manager
747 Market Street
Tacoma, WA 98402

Les Eldridge, Chair
Thurston County Commissioners
2000 Lakeridge Dr. SW
Olympia, WA 98502

Harold Robertson
Regional Planning Council

Mark Jackson
Mayor of Dupont
P.O. Box 455
Dupont, WA 98327

Mike Matlock
City Planner

Charles Wolfe
Mayor of Roy
P.O. Box 700
Roy, WA 98580

Robert Anderson
Mayor of Steilacoom
1715 Lafayette St.
Steilacoom, WA 98388

Mike Shuttleworth
Town Planner

Ron Lawton
Mayor of Yelm
105 Yelm Ave. W
Yelm, WA 98597



FRONT	INTER
WATER	
LAND	
ADIC	
TE	

George L. Barner, Jr.
District One
Diane Oberquell
District Two
Les Eldridge
District Three

BOARD OF COUNTY COMMISSIONERS

January 11, 1990

Joe Stortini, Executive
Pierce County
930 Tacoma Avenue South
Tacoma, WA 98402

*Let me know
what you
have*
RECEIVED
JAN 19 1990
COUNTY EXECUTIVE

Joe
SUBJECT: Joint Land Use Study with U.S. Defense Department

Dear Mr. Stortini:

We have examined the work program for the Fort Lewis/McChord Joint Land Use Study as outlined in your letter of December 21, 1989. We believe this type of intergovernmental planning has the potential for benefiting all parties involved. We are pleased to inform you Thurston County is prepared to participate in this important cooperative effort and to commit the necessary personnel.

We understand that this participation will involve: (1) attendance by one member of our planning staff at up to fifteen meetings of the Technical Review Committee; (2) formal review of the final document and any other products of this study; and (3) implementation of any recommendations which in our judgment would be of benefit to Thurston County and its citizenry. In addition, we stand ready to provide any readily available information regarding Thurston County which may be of use in this study.

Please advise us as soon as possible regarding the projected schedule so that we may allocate our resources accordingly. Thank you for this invitation and for taking the lead in coordinating this effort.

Sincerely,

Les

Les Eldridge, Chair

George

George L. Barner, Jr., Commissioner

Diane

Diane Oberquell, Commissioner

24:sd

cc: Joe Stortini



Office of the Mayor
Karen L. R. Vialle

January 10, 1990

ROUTE TO	
JOE	
ANDREYA	
DAN	
DON	
JIM	
INT	
FILE	

RECEIVED
JAN 12 1990
COUNTY EXECUTIVE

Joe Stortini
Pierce County Executive
930 Tacoma Avenue South
Tacoma, Washington 98402

Dear Mr. Stortini:

Joe

Please be advised that the City of Tacoma will participate in the McChord/Fort Lewis Joint Land Use Study (JLUS). The Planning Department has reviewed the scope of work and process material provided by your office and find it satisfactory to our needs and responsibilities in this study.

The staff person assigned to assist on this project is Bob Arleth of the Planning Department. Mr. Arleth may be reached at 591-5385.

We view this JLUS as important from an economic and land use standpoint to both Pierce County and the City of Tacoma. Consequently, we are committed to carrying the final study through our adoptive procedures and to pursuing implementation of the study recommendations.

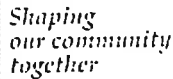
Thank you for the opportunity to participate in this worthwhile, cooperative project.

Sincerely,

Karen

Karen Vialle
Mayor

KV:sh

CITY OF **LACEY**

POST OFFICE BOX "B" / 420 COLLEGE
LACEY, WASHINGTON 98503-0507

RECEIVED

JAN 11 1990

COUNTY EXECUTIVE

CITY COUNCIL

KAY BOYD, *Mayor*
DENNIS INGHAM,
Deputy Mayor
WILLIAM A. BUSH
JERRY GRAY
ROBERT JENSEN
GENE LIDDELL
EARLYSE A. SWIFT

CITY MANAGER
GREG J. CLOIO

January 3, 1990

Joe Stortini, County Executive
Pierce County
930 Tacoma Ave. South, Room 737
Tacoma, WA 98042

SUBJECT: McChord/Ft. Lewis Joint Land Use Study

Dear Mr. Stortini:

I have very much appreciated being kept up to date on your conversations and negotiations with the U.S. Department of Defense concerning the Joint Land Use Study between DOD and the affected local jurisdictions.

Although the City of Lacey is to some degree impacted by the activities associated with both McChord and Ft. Lewis, we are physically separated from either facility by approximately ten miles, and we do not anticipate that the Lacey corporate limits will expand through annexation to place us any closer. The areas east of Lacey that might be impacted by these facilities are those rural areas near and in the Nisqually Delta. Through an Urban Growth Management Agreement between Thurston County and the cities of Lacey, Olympia and Tumwater, this area is not planned for other than rural levels of development. Therefore, there would be no need for City services and thus no need for annexation.

It is my understanding that Thurston County will be participating in the Joint Land Use Study. Planning officials of Thurston County have agreed to keep the City of Lacey informed on this project as it moves forward. Perhaps in the future we will feel called to comment on some aspect of the study and trust any such comments will be well received.

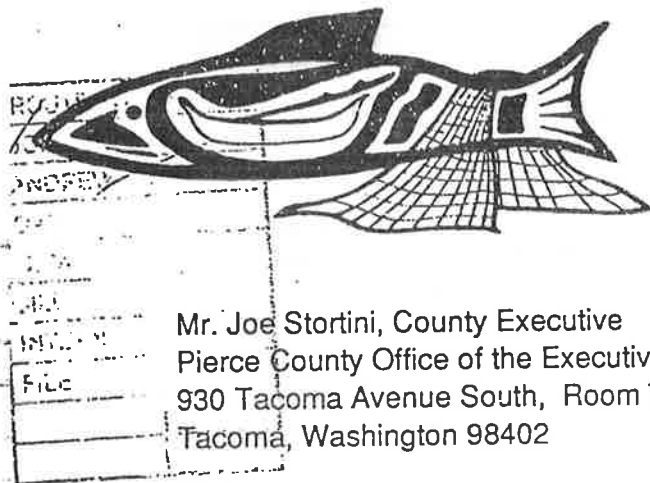
Thank you again for your courtesy in keeping Lacey informed.

Cordially,

Kay M. Boyd
Kay M. Boyd,
Mayor

cc: Councilmembers
Greg Cuoio, City Manager
Bob Patrick, Community Development Director

ROUTE NO	INITIAL
JOE	
ANDREW	
DAVE	
BOB	
JOHN	
AL	
BOB	
AL	



Nisqually Indian Tribe

4820 She-Nah-Num Drive S.E.
Olympia, Washington 98503
Phone: 456-5221

December 28, 1989

RECEIVED
JAN 02 1990
COUNTY EXECUTIVE

RE: Proposed McChord/Ft. Lewis Joint Land Use Study (JLUS)

Dear Sir:

This is to respond to your letter regarding the above referenced subject received by our office on December 23, 1989. The Nisqually Indian Tribe wishes to inform you of its intention to take part in the JLUS. We are having our appropriate staff review the proposed work program and will comment on its feasibility if there are concerns and questions.

Along with this commitment letter we want to express briefly our concern that the Tribe's jurisdiction in a portion of the subject matter area be recognized fully in the study and that the Tribe's rights secured by the Treaty of Medicine Creek (10 Stat. 1132) be articulated in a fashion adequate to protect them. The Tribe has a special relationship and special interests to be considered in the JLUS study, since the boundaries of the Nisqually Reservation extend to the Pierce County side of the Nisqually River and encompass approximately 2,000 acres. It will be important to give consideration, also, to the Tribe's Clear Creek fish hatchery being constructed on the Fort Lewis-Pierce County side of the Nisqually River. Further, we will need to be cognizant of the archaeological and cultural resources in the area. We are confident that all of these matters (and many other concerns important to the Tribe) will be fully explored and addressed in the study if it is done adequately. We look forward to working with you and appreciate your invitation to participate in the study.

Sincerely,

Dorian S. Sanchez, Chairman
Nisqually Indian Tribe

DSS/af (disk 9)

JAN 10 1990
PIERCE COUNTY

APPENDIX C

ENVIRONMENTAL DOCUMENTS

ACTION: Joint Land Use Study

Pierce County Executive

PIERCE COUNTY
MITIGATED DETERMINATION OF NONSIGNIFICANCE

PROPONENT: Pierce County Executive

PROPOSAL: A collaborative planning effort involving the military installations of Fort Lewis, McChord Air Force Base, and Camp Murray (Washington National Guard) and ten local governments surrounding these installations. The broad goal of the study is to encourage compatible development and redevelopment in each affected jurisdiction, that balances sustaining the local military missions with long-term community land use needs.

LOCATION: Areas in Pierce and Thurston Counties surrounding Fort Lewis, McChord AFB, and Camp Murray National Guard installations.


THRESHOLD
DETERMINATION: The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement is not required under RCW 43.21C.030(2)(C). This decision was made after review of a completed Environmental Checklist and other information on file with the lead agency. This information is available to the public on request.

This Mitigated Determination of Nonsignificance (MDNS) is issued under 197-11-340(2); the lead agency will not act on this proposal for 15 days from the date of issue, comments must be submitted by closing of the comment deadline. The responsible official will reconsider the MDNS based on timely comments and may retain, modify, or, if significant adverse impacts are likely, withdraw the MDNS. If the MDNS is retained, it will be final after the expiration of the comment deadline. No permits may be issued, and the applicant shall not begin work until the comment deadline has expired and any other necessary permits are issued.

Responsible Official: Debora A. Hyde, Director
Lead Agency: Planning and Land Services
Pierce County Public Services Building (Annex)
2401 South 35th Street
Tacoma, Washington 98409
(206) 591-7210

Date of Issue: December 24, 1991

Comment Deadline: January 8, 1992


Joseph A. Scorcio, Environmental Designate

NOTE: Pursuant to RCW 43.21C.075 and Pierce County Environmental Regulations Chapter 17.08.180, decisions of the Responsible Official may be appealed. Appeals are filed with appropriate fees at the Planning and Land Services Department, located at the Development Center in the Public Services Building. Appeals must be filed within 30 days of the expiration of the comment deadline.

NOTE: The issuance of this Mitigated Determination of Nonsignificance does not constitute project approval. The applicant must comply with all other applicable requirements of Pierce County Departments and/or the Hearing Examiner prior to receiving construction permits.

MITIGATING MEASURES

The probable environmental impacts of this proposal are documented and have been clarified by the proponent and are found in the environmental checklist and other information on file with Pierce County Planning and Land Services. In addition to the requirements of the reviewing agencies which are based on existing regulations other than SEPA, the Pierce County Environmental Official has determined that other mitigating measures will be necessary to insure that the proposal will not have a significant impact on the environment. These mitigating measures are required under the Substantive Authority of SEPA in accordance with the guidelines contained in Section 17.08.170 of the Pierce County Code and are enumerated below.

Mitigating Measures:

1. Agreement by participating jurisdictions that specific implementation measures are subject to environmental review on a case-by-case basis.

12JLUS.DNS

PIERCE COUNTY
ENVIRONMENTAL CHECKLIST

I. BACKGROUND INFORMATION

1. Name of Proposal: JOINT LAND USE STUDY
2. Applicant: PIERCE COUNTY EXECUTIVE
Address: 930 Tacoma Avenue South, County-City Building
7th Floor; Tacoma, WA. 98409
Phone: 206-591-7477
3. Agent: Marsha L. Huebner, Senior Planner
Address: 2401 South 35th Street, Tacoma, WA. 98409
Phone: 206-591-7398
4. Location of Project:
 - a. Address: McChord AFB, Fort Lewis, Camp Murray, and 1/2 mile outward from the boundaries of these military installations, and the 65 Ldn noise contour of McChord AFB.
 - b. Legal Description: Not applicable.
 - c. Maps of the Joint Land Use Study area and zoning atlas are available for review at the Pierce County Planning and Land Services Department at: 2401 South 35th Street, Tacoma, WA. 98409
 - d. Nearest Town or City: CITIES OF TACOMA, ROY, YELM, LACEY, DUPONT, STEILACOOM, RAINIER.
5. Zoning or Environment Designation:

Maps of the Joint Land Use Study area and zoning atlas are available for review at the Pierce County Department of Planning and Land Services at, 2404 South 35th Street, Tacoma, WA. 98409. The study identified land use designations and zoning classifications in the study area. Discussions of land use and zoning on the operations of the military bases occurs. Zoning is a full complement of classifications; industrial, commercial, multi-family housing, single-family housing, agricultural, forestry and recreation zone and manufacturing.

6. Shoreline Master Program Designation:

Because of the size of the study area, diversity of shoreline types, and amount shoreline located both within state and federal jurisdictions, it is recommended that interested parties review the Pierce, and Thurston Counties Planning Departments, Shoreline Environmental Atlas. Fort Lewis has Puget Sounds shoreline the is not designated shoreline. The Nisqually River is designated "Conservancy," "Natural," and "Rural". American Lake is designated "Urban". No Shoreline of the state are specifically addresses in the study. No recommendations are made regarding shorelines.

7. Size of Study Area:

Approximately 125,600 total acres

8. Description of site as it currently exists:

McChord Air Force Base, Fort Lewis, and Camp Murray occupy a large contiguous block in the southern Puget Sound basin in the State of Washington. The bulk of this land is in Pierce County with a significant portion of Fort Lewis located in northern Thurston County. Specific acreage totals for the three installations are shown below.

INSTALLATION		ACRES
Fort Lewis		86,176
McChord Air Force Base		4,601
Camp Murray		228
TOTALS		91,005

Between the Pierce and Thurston County portions of Fort Lewis along the Nisqually Indian River is the Nisqually Indian Reservation. On a southwest-northeast axis, the military installations extend approximately 22 miles bridging the Nisqually River northwest of Yelm. From its western border on Nisqually Reach in Puget Sound, Fort Lewis stretches over 15 miles to the southeast.

Surrounding the installations are a number of incorporated cities and towns and unincorporated communities (see Figure 2.1 in text). The largest concentration of population is clustered in the northern one-third of the study area, encompassing the City of Tacoma, Towns of Steilacoom and Dupont, and the communities of Lakewood, Tillicum, Parkland, and Spanaway. Several smaller towns flank the eastern border of Fort Lewis, including Roy, Yelm, and Rainier. The Cities of Lacey and Olympia are located at the southern-most extent of Puget Sound, approximately six miles west of Fort Lewis.

The terrain ranges from a nearly level plain with isolated, well-rounded hills in Pierce County, to hilly (generally less than 15 percent slope) in Thurston County. Steep bluffs fronting Puget Sound and along the Nisqually River are exceptions. A lack of significant topographic variation contributes to the region's overall suitability for military training exercises.

Most of the surface land features of the Joint Land Use Study area were formed during the recent Glacial episodes. Large blocks of ice contained in the outwash deposits of the Vashon Glacier melted to form large depressions, many of which are filled by ground-water lakes which are a key feature of the area. Suitability of the soils for agriculture is limited generally to forage and trees. Most soils are excessively drained, gravelly, sandy loams about two feet thick and represent unconsolidated to partially consolidated glacial deposits. The Nisqually Delta alluvial fan with associated river deposit soils spreads out just west of Fort Lewis before emptying into Puget Sound.

The Nisqually River is the primary hydrologic feature in the study area and its watershed drains a large proportion of Fort Lewis. In the south Fort Lewis area in Thurston County, the Deschutes River watershed drains into Budd Inlet. Other major drainages include Muck Creek, Murray Creek, Clover Creek, and Sequatchew Creek. Several major freshwater bodies of water are located on or near the military installations including American Lake, Spanaway, Gravelly Lake, Sewallitchew Lake, Lewis Lake, Nisqually Lake, Lake St. Clair, Patterson Lake, and Offut Lake.

Strategically, the installations are ideally situated to meet national defence objectives. Five miles north of the northern tip of McChord AFB is the Port of Tacoma, a deep water, containerized shopping port. Both rail and interstate connections link the port facilities with the military installations and points south. In addition, the Yakima Firing Center is located due east across the Cascade Range (three hours by state highway). The Firing Center which facilitates large scale training maneuvers in arid semi-desert conditions.

Land uses adjacent to the study area:

There is a wide range of land uses surrounding the more than 91,000 acres occupied the military. This diversity can be characterized by a north to south trend from higher-to lower-intensity land uses that corresponds to population density. Specific land use compatibility issues are discussed in Chapter 4 of the Joint Land Use Study. Please refer to Figure 2.2 from the study in the Appendix for the location of the areas shown below.

The Northern Perimeter

In the areas north and northeast of the military lands (encompassing Steilacoom, Lakewood, South Tacoma, Parkland, and Spanaway), the prevailing land use is single family residential.

Several historic and recent commercial pockets and corridors serve this area, the most notable of these being Lafayette Street in Steilacoom, Lakewood Colonial Center, and Lakewood Mall, South Tacoma Way in Lakewood from Ponders northward, the Interstate 5 service corridor from South 84th Street northward (including the Tacoma Mall) and Pacific Avenue from S.R. 512 south to the Roy Y.

Multi-family residential land uses are prevalent along with short distances of Bridgeport Avenue and South Tacoma Way in Lakewood, in the Tillicum and American Lake Gardens communities, along Hosmer Street in South Tacoma and within one-half mile of SR 512 and Pacific Avenue in Parkland and Spanaway. Small pockets of other land uses dot the northern border of the installation.

Eastern Side Pierce County

Moving clockwise from Spanaway around the perimeter of the installations, the border South of the Roy Y along the eastern fringe of Fort Lewis to 260th Street East is characterized by low-density residential (mixed use) and recent subdivision activity. Over the past five years, several twenty-to fifty-lot single family residential developments have been approved along the Mountain Highway corridor (S.R. 7).

On lands abutting Fort Lewis in Pierce County from the Mountain Highway to McKenna, little recent development activity has occurred. The area is characterized by large parcels with a single family dwelling and mixed uses that are characteristically rural. Large tracts of vacant (cleared and forested) land are also in evidence. Located in this area is the town of Roy. Roy which has a small commercial center and a concentration of residences.

Thurston County

In Thurston County from Yelm around Fort Lewis and north to Interstate 5, adjacent lands are characterized by vacant (forested) or agricultural land uses. Pockets of residences also dot the area, particularly east of Lacey around Lake St. Clair and north to the freeway. Both Yelm and Rainier have established commercial centers and there is a new commercial service center at the Marvin Road exit of Interstate 5. The Nisqually Indian Reservation, abutting Fort Lewis on the south

and across the Nisqually River on the east, is primarily forested with low-density residential.

Nisqually Delta and DuPont

The area north of Interstate 5 and west of the river is set aside for the Nisqually National Wildlife Refuge. Between the mouth of the Nisqually and the Fort Lewis boundary west of Interstate 5 is the Town of DuPont. Long range plans in DuPont anticipate the continued development of Northwest Landing, a new fully contained community anticipated at completion to house 14,000 residents and provide 17,000 jobs (mostly in manufacturing). Existing use for DuPont is primarily single-family residential with one commercial establishment.

Fort Lewis

Major land uses within Fort Lewis include the cantonment (build-up area), training, artillery impact and small arms impact areas. Currently, the cantonment area and comprises approximately 7,000 acres, divided by Interstate 5 into North Fort and Main Fort areas. North of the freeways are Beachwood and Lakeside family housing and American Lake recreational area. To the south of the freeway are Gray Army Airfield, the main garrison and family quarters. Madigan Army Medical Center and the Logistics Center are located to the northeast of the main garrison. The open operational area of Fort Lewis consists nearly to 10,000 acres in North Fort and 34,000 acres in Main Fort. The Fort also has developed recreational facilities and extensive hunting and fishing areas.

McChord AFB

The Burlington Northern Railroad right-of-way divides McChord AFB into eastern and western sections. Aircraft mobilization and maintenance facilities, along with almost all administrative support functions, are located on the eastern portion. The western area contains the 25th Air Division, the 800 Area Ammo Storage and explosive safety clear distances, family housing, a golf course, and other recreational areas.

10. Description of Joint Land Use Study and how it will be used :

The Joint Land Use Study (JLUS) is a collaborative planning effort involving the military installations of Fort Lewis, McChord Air Force Base, and Camp Murray (Washington National Guard) and ten local governments surrounding these installations. The broad goal of the study is to encourage compatible development and redevelopment in each affected jurisdiction, that balances sustaining the local military missions with long-term community land use needs.

A degree of certainty is sought for surrounding communities as well as for the military, in order that operations can be planned and land use decisions crafted in an environment of relative predictability.

While the focus is land use, related opportunities for increased collaboration are identified. Recommendations are offered for long-range mechanisms to facilitate cooperation on issues of mutual interest.

While the JLUS recommends certain courses of action, it does not regulate nor does it immediately become part of any comprehensive plan. Each participating jurisdiction must decide which JLUS recommendations are applicable to their needs. Implementation will follow the issuance of the final recommendations in March 1992 at the discretion of the elected officials in each jurisdiction and the respective military commands.

11. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain:

Once the study has been completed, recommendations will be implemented each participating government or agency as they deem appropriate. Implementation will be separate individual actions for SEPA compliance purposes and may consist of the following actions: adoption of the study and its recommendations as an interim amendment of respective comprehensive plans, pending the update of comprehensive plans pursuant to the Growth Management Act; adoption of aircraft noise sensitive areas for public notice and environmental review purposes; adoption of aircraft noise sensitive areas as "environmentally sensitive areas" in environmental regulations; development and adoption of ordinances that regulate the use of land in the clear zone of McChord AFB and aircraft accident potential zones; and adoption of a configuration and alignment for a cross-base arterial. Other implementation techniques may be identified and evaluated prior to issuance of the final draft study.

12. Proposed timing for completion of the proposal (include phasing if applicable):

The final draft Joint Land Use Study will be issued on March 1, 1992. Implementation of the study will take longer. Timing has not been determined.

13. List any environmental information you know about that has been prepared or will be prepared directly related to this proposal:

The environmental information which has been prepared for this study is located in the study document itself and in this environmental check list.

14. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain:

Building permit applications are pending as well as requests for zone reclassifications and subdivisions. Please refer to Appendix.

15. List all of the Permits, Licenses, or Government Approvals for the proposal (Federal, State, and Local, including Rezones):

Each jurisdictions planning commission will review the study and deliver recommendations to city/county councils/commissions. Recommendations may include permits, licenses or government approvals.

II. ENVIRONMENTAL IMPACTS

This Space For
Agency Use
Only

EARTH

a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other.

hilly

The terrain ranges from a nearly level plateau with isolated well-rounded hills in Pierce County to hilly (generally less than 15 percent slope) in Thurston County.

b. What is the steepest slope on the site (approximate percent slope)?

@15%
Source: United States Geological Survey

c. What general types of soils are found on the site (for example; clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farm land.

(1) ALDERWOOD EVERETT ASSOCIATION: Nearly level to rolling, moderately well drained and somewhat excessively drained soils that formed in glacial till glacial out wash.

(2) KAPOWS IN ASSOCIATION: Undulation to rolling, moderately well drained soils the formed in glacial till, or uplands.

(3) SPANAWAY ASSOCIATION: Nearly level, somewhat excessively drained soils that formed in glacial outwash, on uplands.

d. Are there surface indications or history of unstable soils in the immediate vicinity?

Soils are generally unconsolidated glacial till overlain with organic soils. In the eastern portion of Fort Lewis wetlands have produced hydric soils.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

This study will not result in grading or fill of any kind. When adopted, and implemented, noise buffers may be constructed which may involve some fill or grading to occur. Also, streets, parking and gate facilities, may be improved or constructed which may include quantities of fill, or grading, the nature or amount has not yet been determined. Each case will require individual environmental review.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

There are recommendations regarding the building of noise buffers or shields, road, highway improvement and military installation gate improvement or construction, this kind of construction should have no effect, or cause erosion of any kind. During the construction process, all standard county and state approved methods for erosion abatement will be used.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

This study will propose the improvement, and construction of road and highway systems which may increase the amount of impervious surfaces within the study area, the amount of which has not yet been determined yet.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

This study will not propose measures to reduce or control erosion. Any construction and development which takes place because of the implementation of this study will take all normal standard county and state approved measures to reduce and control erosion.

2. AIR

a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities, if known.

This study will propose or recommend the construction of improved road and highway systems, and noise buffers, the construction process may cause some dust, automobile, odors, or other emissions into the air, however these would be of small impact, and would disperse quickly. This study would also recommend the reduction of construction in the clear, and accident potential zones, which would cause a net reduction of air emissions associated with the construction process.

b. Are there any off-site sources of emissions or odor that may effect your proposal? If so, generally describe.

Automobile fumes, aircraft exhaust, and localized odors resulting from industrial processes.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Any construction or other activities occurring because of the implementation of this study which will cause emissions of any sort will be controlled and reduced by standard county and state approved methods. The greater use of mass transit as recommended by this study will reduce automobile emissions. The study also recommends that the military reduce fire risks, provide fire breaks, and provide access for civilian fire fighting equipment to training areas, all of which may reduce smoke, and other fire related emissions in to the air.

3. WATER

a. Surface:

1. Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

- | | |
|---------------------|------------------------|
| a. Nisqually River | h. Bowman Lake |
| c. Nisqually Lake | d. Farnsworth Lake |
| e. St. Clair Lake | f. Hodge Lake |
| g. Saw Mill Lake | h. Old Fort Lake |
| i. American Lake | j. Park Marsh |
| k. Sequelichew Lake | l. Carp Lake |
| m. Shannon Marsh | n. Clover Creek |
| o. Murray Creek | p. Kinsey Marsh |
| q. Lake Saul | r. Lake de Balon |
| s. Bill Lake | t. Lake Mondress |
| u. Dailman | v. Chambers Lake |
| w. Muck Lake | x. Halverson Marsh |
| y. Hamer Marsh | z. Muck Creek |
| aa. Lacamas Creek | bb. Branden bury Marsh |
| cc. Spanaway Lake | dd. Foot Lake |
| ee. South Creek | ff. Hassett Marsh |
| gg. Purvis Ponds | hh. Tule Lake |
| ii. Morey Creek | jj. Charlton |
| kk. Owens Marsh | ll. Wapato Lake |
| mm. Carter Lake | nn. Gravelly Lake |
| oo. Spanaway Creek | pp. Puget Sound |
| qq. Lake Louise | rr. Farrel Marsh |

There are other lakes, rivers, streams, and wetlands with in the study area, not listed here as they are unnamed on the USGS reference maps.

2. Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans for this work.

This study will cause no work of any kind in, over or adjacent to any body of water.

3. Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be effected. Indicate the source of fill material and/or disposal site.

This study will not recommend or cause dredging or filling in or around any water bodies of any kind.

4. Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities, if known.

This study will cause no withdrawals or diversions of surface water.

5. Does the proposal lie within a 100-year floodplain? If so, note flood plain location on the site plan.

There are numerous 100 year floodplain areas located within the study area. This study will cause no impact or change to occur within, or adjacent to the floodplain areas. Because of the number, type and diversity of these floodplains it is recommended that any interested parties review the flood plain presentation map, or Federal Emergency Management Act (FEMA) maps at the Pierce and Thurston Counties Planning Departments.

6. Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

This study will cause no discharges of waste materials into surface waters.

b. Ground:

1. Will groundwater be withdrawn, or will water be discharged to groundwater? Give general description, purpose, and approximate quantities of withdrawals or discharges, if known.

This study will cause no groundwater to be withdrawn, or water to be discharged into the groundwater.

2. Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) is/are expected to serve.

This study will not cause discharge of waste or any other kind of material into the ground.

c. Water Runoff (including storm water):

1. Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

This study will cause no runoff, nor will this study propose any method of collection and disposal.

2. Will this project generate waste materials which, if not handled properly could enter ground or surface waters? If so, generally describe.

This study will generate no waste materials. By reducing development in the clear and accident potential zones, and by the greater use of mass transit, automobile residue such as oil, gasoline, or other related waste products entering the ground or surface water will be reduced.

- d. Proposed measures to reduce or control surface, ground, and run off water impacts, if any:

This study will not propose any measures to reduce or control surface, ground, and run off water impacts. Any construction or development occurring because of the implementation of this study will take all county, state and federal approved measures to reduce and control surface, ground, and run off water impacts.

4. PLANTS

- a. Circle types of vegetation found on the site and list specific species:
deciduous tree: example - alder, maple, aspen, other
evergreen tree: example - fir, cedar, pine, other shrubs, grass, pasture, crop or grain
wet soil plants: example - cattail, buttercup, bulrush, skunk cabbage, other
water plants: example - water lily, eelgrass, milfoil, other
other types of vegetation

The study area is likely to include all of the plant types or species listed. For a more complete list, please see the attached list of area vegetation types and species.

- b. What kind and amount of vegetation will be removed or altered?
Any vegetation that will be removed because of any construction or development caused by the implementation of this study will be small.
- c. List threatened or endangered plant species known to be on or near the site.
- Please see the appendix located at the end of this check list for a list of threatened and endangered plant species.
- d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

This study will propose no specific landscaping or other measures to preserve or enhance vegetation within the study area. All due care will be taken to reduce the amount of native plants and other vegetation

removed because of development or construction by the implementation of this study.

5. ANIMALS

- a. Circle any birds or animals that have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other:

The study area is likely to include many, if not all of the animal, bird or fish types listed. For a more complete list, please see the attached list of bird types and species.

- b. List any threatened or endangered animal species known to be on or near the site.
- Please see the appendix located at the end of this check list for a list of threatened or endangered animal species.
- c. Is the site part of a migration route? If so, explain.
- The area covered by the Joint Land Use Study is part of the seasonal fly-way for duck, and geese. There may be migratory activity of some species of anadromous fish.
- d. Proposed measures to preserve or enhance wildlife, if any:
- This study will not propose any measures to preserve or enhance wildlife.

6. Energy And Natural Resources

- a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

This study will not use, or cause to be used any kind of energy. However, it is likely that within the study area all types of energy types listed are currently being used. This study will recommend the

cessation, or reduction of development within the clear, and accident potential zones which will reduce the amount of energy used.

- b. Would your project effect the potential use of solar energy by adjacent properties? If so, generally describe.

This study would cause no effect on the use of solar energy within, or adjacent to the study area.

- c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

This study will recommend the extended use of mass transit, and the application of insulation to new and current structures in the Clear Zone, Accident Potential Zone 1 and Accident Potential Zone 2 and all 65 Ldn noise zones, to reduce aircraft noise, and also conserve energy.

Environmental Health

- a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

This study will not cause, or propose any use that could cause environmental health hazards of any kind. This study will however address artillery fire mishaps, and potential aircraft accidents, both of which may include health hazards, such as exposure to toxic chemicals, fire, and explosion, and its possible mitigation. However, this study will not cause any of the above mentioned health hazards.

- 1) Describe special emergency services that might be required (for example chemical spills or explosions).

NOT APPLICABLE

- 2) Proposed measures to reduce or control environmental health hazards, if any:

This study recommends that noise, aircraft accidents, artillery and small arms fire accidents, and inadvertent fire be reduced and controlled. All of the above are examples of environmental

hazard which are addressed in this study. There are also recommendations for continued ongoing studies to determine ways to reduce or control accidental occurrences which may cause environmental health hazards.

b. Noise

- 1) What types of noise exist in the area which may effect your project (for example: traffic, construction, or production equipment, other)?

This study will address aircraft, artillery, and small arms fire as noise issues, and will recommend ways to lessen, or mitigate this noise. This study will also address traffic, and other issues which may contribute to the overall noise level, but these other sources of noise generation will not be discussed. There may be construction noise from improvements and development to the road and highway system, and noise buffer construction but this noise generation will be temporary.

- 2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, or production equipment, other)? Indicate what hours noise would come from the site.

Short term noise may come from construction of the improvement or construction of road or highway systems, and the construction of noise buffers. The hours of this construction activity would be between the hours of 6:00 AM and 8:00 PM. The use of all county, state, and federally approved mitigation methods will be used.

- 3) Proposed measures to reduce or control noise impacts, if any:

This study will make recommendations to reduce or control noise impacts from aircraft, artillery, and small arms fire, such as the building of noise buffers, changing the location of noise producing activities, and seeking new technology which would control noise production. Also, the study recommends that building improvements, and new construction be modified with added noise insulating materials in order to reduce the noise impacts inside new, and existing structures within the 65 Ldn noise contours.

8. Land And Shoreline Use

- a. What is the current use of the site and adjacent properties?
The current use of the study area is for the stationing, and training of military troops, and storage of equipment within the boundaries of military installations. Outside the installations boundaries, there is a mix of public, and private land uses normally associated with a urban, suburban, and rural communities. The land use adjacent to the study boundaries are an extension of the uses in the private sectors within the study area. Please see Figure 2.2 in the study document.
- b. Has the site been used for agriculture? If so, describe.
The study area includes many different land uses, some of which are currently agricultural in nature. Also, in the past much of the study area has been used for agriculture and forestry. Over the years, the amount of land devoted to agriculture and forestry has declined as the process of urbanization has occurred. This process continues to occur today as the area within the study area becomes more populated. Today, the areas most heavily used agriculturally is the south and southwestern sections of the study area in south Pierce and northern Thurston Counties.
- c. Describe any structures on the site.
Within the study area, there is almost every kind or type of structures present.
- d. Will any structures be demolished? If so, what?
This study makes recommendations which will restrict human activity totally or in part within the Clear Zone. To one degree or another depending on which recommendation is implemented, all current structures in the clear zone may be demolished, or no new construction may be allowed, with all current human land uses to be declared non-conforming.
- e. What is the current zoning classification of the site?

The area included with in this study contains every zoning designation included in the Pierce County Zoning Code, and many of the zones included the in participating jurisdictions zoning codes.

- f. What is the current comprehensive plan designation of the site?
The area included within the study area includes many of the comprehensive plan designations included in the Pierce County Comprehensive Plan, and many comprehensive plan designations included with in the participating jurisdictions comprehensive plans.
- g. If applicable, what is the current shoreline master program designation of the site?
Within the boundaries of the three military installations under study, there are no shoreline master program designations. However, with in the one-half mile area out side the installation boundaries, there is every shoreline designation on the various streams, rivers, lakes, wetlands, and other water ways.
- h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.
No part of the study area has been designated as an "environmentally sensitive" area.
- i. Approximately how many people would reside or work in the completed project?
The number which reside within the participating jurisdictions are;

<u>CITIES and COUNTIES</u>	
Pierce Co.	339,828*
Tacoma	176,664
Steilacoom	5,728
DuPont	592
Roy	258
Thurston Co.	98,745*
Lacey	19,279
Yelm	1,337
Rainier	291
TOTAL	643,422

* These numbers reflect only the population in the unincorporated areas of the county.

j. Approximately how many people would the completed project displace?

This study makes recommendations which if implemented may displace those people now living within the Clear Zone of McChord AFB.

k. Proposed measures to avoid or reduce displacement impacts, if any:

Displacement impacts are necessary if the safety hazard of residences being located in the clear zone of McChord AFB is to be addressed. Adherence to federal relocation guidelines can mitigate some of the effect. Another alternative to relocating people away from the accident potential danger is to relocate the airfield to an area that does not have people near it. Relocation of McChord AFB would affect far more people than purchase of land in the clear zone than would subsequent relocation of people currently living there.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:
This study suggests that participating jurisdictions make certain changes to their land use plans and land use regulations to implement recommendations.

This draft study proposes recommendations to restrict development within the Clear Zone. Residences and land uses that concentrate people are suggested to be discouraged in Accident Potential Zone 1 (APZ-1) and Accident Potential Zone 2 (APZ-2). Noise abatement through modified construction standards for buildings located in the most noisy aircraft and artillery areas is suggested (areas with aircraft noise greater than 65 Ldn and or 57 cDb. The study also recommends coordination and cooperation between military and civilian planners in order to enable compatible land uses planning that reflects the missions of the military installations and community needs.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

Although housing is briefly addressed in the study, the study does not offer any recommendations to provide housing units.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

This study makes three separate recommendations regarding human activity within the Clear Zone. Recommendations include the Department of Defense purchasing the land in the Clear Zone which would likely mean that residents would relocate and residences would be moved or demolished. The recommendation which would cause the least impact would be to rezone the Clear Zone restriction further development, causing any current structures and land use to be non-conforming. The current housing type located in the Clear Zone is low income.

A draft recommendation for Accident Potential Zone I is to discourage all forms of residential development. How Pierce County and the City of Tacoma choose to "discourage" residences will not be determined through the Joint Land Use Study. Specific implementation measures will be evaluated for their effect on affordable housing.

c. Proposed measures to reduce or control housing impacts, if any:

Specific implementation measures will be analyzed for effects on housing within each jurisdiction as they are developed. Recommendations are statements of objectives that can be implemented a number of ways.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas or chimneys; what is the principal exterior building material(s) proposed?

This study proposes no structures of any kind.

b. What views in the immediate vicinity would be altered or obstructed?

This study will cause no views to be altered or obstructed.

c. Proposed measures to reduce or control aesthetic impacts, if any:

No aesthetic impacts have been identified.

11. Light And Glare

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

There may be some light or glare conditions present in the study area during the construction or development of noise buffers or the improvements of current transportation systems such as roads or highways. These light and glare conditions would only exist temporally during the construction period.

- b. Could light or glare from the finished project be a safety hazard, interfere with views, or effect wildlife?

There would no light or glare conditions present from any of the recommended constriction or developments projects.

- c. What existing off-site sources of light or glare may effect your proposal?

None.

- d. Proposed measures to reduce or control light and glare impacts, if any:

This study will propose no measures to reduce or control light or glare impacts.

12. Recreation

- a. What designated and informal recreational opportunities are in the immediate vicinity?

There are designated, and informal recreational opportunities of every kind available within the study area.

- b. Would the proposed project displace any existing recreational uses? If so, describe.

This study will not cause any displacement of existing recreational opportunities or uses.

- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

This study does not propose any measures to reduce or control impacts on recreation, or recreational opportunities.

13. Historic And Cultural Preservation

- a. Are there any places or objects listed on, proposed for, or eligible for listing in national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

Please see the appendix which contains a list of places or objects listed on, for, or eligible for listing in national, state, or local preservation registers.

- b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

Please see the appendix which contains a description of any landmarks or evidence of historic, archaeological, scientific, or cultural importance.

- c. Proposed measures to reduce or control impacts, if any:

This study does not propose any measures to reduce or control impacts on historic, archaeological, scientific, or cultural sites or object in or adjacent to the study area.

14. Transportation

- a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

The main north-south transportation corridor in Western Washington is Interstate 5, which transects Fort Lewis in southern Pierce County. McChord Air Force Base is accessible from Exit 125 (Bridgeport Way) and Camp Murray via Exit 122 (Madigan Hospital). Different parts of Fort Lewis use Exits 116, 119, 120, 122, 123, and 124. Exit 120 is the main entry gate for Main and North Fort. Three lanes flow in

each direction except for the northern section near McChord which has four lanes.

North of McChord, State Route 512 exits from Interstate 5 travelling easterly. The first two exits from this limited access freeway (Sales Road and Pacific Ave) provide access to the eastern side of the installations. The Sales Road exit leads to Spanaway Loop Road from which McChords East Gate is accessible. Several hundred yards east of this gate, the Air Force currently allows public travel on Perimeter Road which crosses the installation south of the runway. This road reconnects with the public road system at 150th Street SW in American Lake Gardens.

Approximately five miles south of the Pacific Avenue (State Route 7) exit from S.R. 512, State Route 507 veers southwesterly from a point known as the Roy Y. Between the Roy and Town of Roy, 507 extends for six miles through Fort Lewis along a Washington State Department of Transportation right-of-way. Several roads (see Figures 2.3 and 4.15) east of S.R. 507 provide public access across the most easterly part of the Fort.

State Route 507 continues south from Roy to McKenna where it crosses the Nisqually River into Thurston County. From Yelm, S.R. 507 is the major north-south route along the eastern frontier of Fort Lewis following south to Rainier, Tenino, Bucoda and Centralia in Lewis County where it joins Interstate 5.

In Thurston County, two roads provide public access across Fort Lewis, State Route 510 from Interstate 5 (Marvin Road) to Yelm and Rainier Road from East Olympia to Rainier. These are both two lane roads with restricted access to military lands outside the rights-of-way.

West of Interstate 5 in the North Fort area of Pierce County, a County right-of-way connects DuPont and Steilacoom via the DuPont-Steilacoom Road.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

Pierce County Transit currently provides a bus system to and through the study area and the three military installations.

c. How many parking spaces would the complete project have? How many would the project eliminate?

This study will not provide or eliminate any parking spaces.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

This study will make recommendations regarding the improvement and possible construction of new road and high-way systems within the study to reduce and control traffic congestion and back-ups. The exact location or degree of these improvements, or new construction have not yet been determined.

e. Will the project use (or occur in the immediate vicinity of) water, or air transportation? If so, generally describe.

This study will address aircraft noise, safety, and potential accident zones, and make recommendations to reduce and control this issues, and hazards. The study area will include the general area of McChord Air Field, and Gray Field at Fort Lewis.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

This study will generate no vehicular trips in, or adjacent to the study area. However this will address transportation, and congestion issues, and does make recommendations for the greater use of mass transit which if adopted will reduce and control the number of vehicular trips per day. Peak traffic hours in the study area are between 6:00 Am and 6:30 PM monday through friday.

g. Proposed measures to reduce or control transportation impacts, if any:

This study will make several recommendations to reduce and control transportation conditions. These recommendations include the improvement of road and highway systems, military installation gate improvements to facilitate traffic flow, and the greater use of mass transportation, which if adopted, will reduce and control traffic impacts.

15. Public Services

- a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe:

This study will cause no increased need for public services of any kind.

- b. Proposed measures to reduce or control direct impacts on public services, if any.

This study will propose and make recommendations for the reduction and control of aircraft and artillery small arms noise, aircraft safety, accidents, civilian and military coordination for mutual fire, accident and emergency occurrences in both military and civilian jurisdictions. This study will also make recommendations to reduce and control traffic congestion and backups. These recommendations if implemented will reduce the need for, and make more efficient uses of the existing public services which will reduce the need for public services in the study area.

16. Utilities

- a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

Within the study area, there are currently available all public or private utilities listed.

- b. Describe the utilities that are proposed for the project, the utility providing the service, and the general utility construction activities on the site or in the immediate vicinity which might be needed.

This study will not propose or recommend the use or need for any utility service or utility construction activity within or adjacent to the study area.

PIERCE COUNTY
ENVIRONMENTAL CHECKLIST

IV. SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS

Agency
Use
Only

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

This study does not recommend land uses which increase discharges to water, emissions to air, or produce, store, or release any toxic, or hazardous substances or the production of noise.

Proposed measures to avoid or reduce such increases are:

The draft study recommends avoidance and reduction of the production of noise created by military installations. A recommendations suggests exploring transportation management systems, mass transit, carpooling, and other transportation modes which can decrease automobile emissions within the study area. The study addresses and make recommendations to reduce and control aircraft accidents, traffic congestion, mutual cooperation and response to fire and other emergency events, all of which will directly and indirectly reduce and control emissions into the air, the production of noise and the release of hazardous substances and the discharge of water.

2. How would the proposal be likely to effect plants, animals, fish, or marine life?

This study will have no effect on plants, animals, fish, or marine life.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

No impacts are anticipated.

3. How would the proposal be likely to deplete energy or natural resources?

Implementation of proposed study recommendations will not deplete energy or natural resources.

Proposed measures to protect or conserve energy and natural resources are:

This study addresses and makes recommendations to reduce and control aircraft, artillery and small arms fire, aircraft and artillery safety, traffic congestion and backups, make greater use of mass transit to, and within the study area and cooperation and coordination between the civilian and military sectors regarding community planning and mutually responding to fire and other emergency events. These measures will directly and indirectly reduce the depletion of energy or natural resources.

4. How would the proposal be likely to use or effect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

This study will not use nor effect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection.

Proposed measures to protect such resources or to avoid or reduce impacts are:

The proposed study recommends that Tacoma and Pierce County to adopt areas within the 65 Ldn contour as "noise sensitive areas" in

local environmental regulations. If adopted, these recommendations could be used as a base for other regulations which effects where development can occur as well as change construction requirements and specifications. These changes can control and reduce the noise impact, and lessen the stress factor on all animals including threatened or endangered species and their habitat.

5. How would the proposal be likely to effect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

This study will not effect land or shoreline use nor will it allow or encourage shoreline uses incompatible with existing plans.

Proposed measures to avoid or reduce shoreline and land use impacts are:

This study will make recommendations to avoid or reduce land use incompatibility within the Accident Potential Zones and Clear Zones.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

This study makes recommendations for the greater use of public transit systems. However, this study does not propose recommendations the implementation of which will increase demand on public services or utilities. Shifting residences from the clear zone and accident potential zones of McChord AFB might increase travel times of people living there and transportation needs. The military plans to increase its troop level by nine to ten thousand personnel (9,000 to 10,000) within the next three to four years which in will increase demands on public services, utilities and transportation.

Proposed measures to reduce or respond to such demand(s) are:

This study makes recommendations for the greater use of transportation management systems, including public transit. The

III. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Date: Dec. 23, 1991 Signature: Martha L. Hunter
Date: December 23, 1991 Signature: Dorothy L. Porter
Notary Public, in and for the State of Washington,
residing at Sumner, Washington (Seal)

proposed study recommends improvements to the road and highway system in order to reduce and control traffic congestion and delays.

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

This study makes no proposal or recommendation which conflicts with local, state, or federal laws or requirements for the protection of the environment.

APPENDIX D

SUMMARY OF PUBLIC WORKSHOP COMMENTS

JOINT LAND USE STUDY
QUESTIONNAIRE RESPONSE

QUESTION:

1. How is your community affected by having the military as a neighbor?

RESPONSES:

I live on South Hill near the Mall (112th). I don't feel any disruption at all.

It helps the economy of a small town.

Totally positive.

The community is affected in no way whatsoever, on the contrary I think it is a good idea.

I do not see the negative affects. Actually, we live in a very quiet neighborhood. We have many fine military families in our church.

Lots of aircraft traffic overhead. Ok as long as they stay in the air. I also realize they were here first. Otherwise a pleasure to have military personnel and their facilities.

I live in Spanaway so one way I am affected is their planes go directly over my house. The noise doesn't bother me, but I am worried a little about an airplane accident.

Don't bother us.

Sir, we live in the Silver Creek Area. Waldrick Road separates our community from the Fort Lewis training zone. The aircraft and artillery noise rattle our windows at times. Sounds like 105 Howitzers are fired just across Waldrick Road from our home.

Economically well--more competitiveness in the business world.

I'm a retired military person. I've been living here since 1955. I love it very much and there are a lot of military.

The military buys cars, houses and gives jobs on base for ex-military and retired military--and they buy gasoline for boats and trucks and RV's, etc. This is income for the states (taxes). The military pays rent in a lot of apartments and homes.

Noise: shelling and aircraft. Restricted access to the Nisqually River. Increased housing shortages and rental fees.

Lots of aircraft noise, but I can live with it.

Apartment complexes built shabby (ie. no places for children to play other than blacktops!). Higher car insurance rates, higher prostitution scenes and higher crime rates.

Joint Land Use Study
Questionnaire/Workshop Responses

It has restricted land development in a very flat -----is possible for the environment. I would like to see these effects continue. Make no real development of military land.

We are a target of evil nations.

A large amount of riffraff (drug, etc.) come here and get out of the military and cause us problems.

Couldn't be better.

A lot of rental housing--unkempt, shoddy yards, noisy broken autos and loud mouth people!

In Oakbrook I'm delighted to have military neighbors--they are good citizens and excellent neighbors. Once in awhile we hear guns on base firing or plane, and I thank God they are there, learning and training to protect this nation.

The military is as advantageous as any large industrial complex, with much more reliability so far as concerns financial input to the area. I appreciate the military, individually and together. The installation provides good neighbors.

If I were an employer, I would never locate any facilities in Pierce County--reason--my employer would not be able to get their rest and come to work refreshed because of the noise level.

Pierce County is very fortunate to have this base here. Excellent neighbors. Quick man power in cases of extreme emergency.

Tax rates go up due to apartments. Apartment owners do not pay a fair tax rate for military dependents enrolled in public schools leaving single family residences the burden for school support, roads, fire protection. Too many apartments being built for military people around the bases.

Noise from low flying aircraft.

I think we should leave our military friends alone, they have just fought a war for us.

Aircraft and helicopter noise. Artillery fire noise. Military retired personnel staying in area, flooding the job market, and hence decreasing wages. Former military personnel staying in area. Military noise at night! (i.e., helicopters over residential areas.) Industrial type pollution on the base. Pluses--people from all over USA living here; steady income for community--lot of young men in area. Have higher rate of auto insurance because of military.

Traffic problems. Especially close to base and Fort Lewis. Military Road and Spanaway Loop intersection, Pacific Avenue.

Some traffic congestion. Some noise pollution by planes where I live.

Joint Land Use Study
Questionnaire/Workshop Responses

Helps overcrowding both with active military personnel and those who have retired. The retirees use Madigan Hospital Facilities. The commissary and PX. Bad influence type businesses (prostitution-nude dancing) move into any area where there is a concentration of young men. Without the military and their facilities, we would only have half the population.

The military contributes to the economy of the local community through an extremely large payroll and purchase of supplies from local manufacturers and outlets. Civil service jobs help keep those persons employed off the unemployment lists.

Good--Helps economy locally; sometimes help is available from military to help some public services. Bad--More traffic; low income military creates social services burden and possible crime; noise from bases.

A good neighbor; No objections to the military.

Provides a more global perspective of our country and the world. Having the military installation in our community enriches the community by reminding us of our national heritage "freedom" and our responsibility to support the desire for freedom. It also provides a greater dimension of the pluralistic nature of our country through the integration of so many different people from so many different places in our country.

Favorably.

The only adverse effect is the noise, and low flying aircraft.

The only adverse effect I perceive is the noise. The regular flights don't bother me I'm used to it, but do they have to roar those engines on Sunday mornings? (I live near the back gate of McChord). You know, when they tie two planes together at the tail and let them play tug-o-war at 40,000 decibels for what seems like hours.

Full housing. Planning is a waste of taxes.

Very good economic source, as a rule a very honest, hard working group of people. Would create quite a void if they were to move elsewhere.

I would like to see the road at Gravelly Lake Drive open once again. This could be very important for it to be open in an emergency. This issue is a big factor for us.

Best thing that ever happened to this area and help to put Tacoma on the map! Military bring in jobs and money for the people of this area.

Noise - Black roofs - Inability to carry on a conversation until aircraft passes.

The area makes its living off the military. Rents, sales and apartments plus houses. It behooves us to get along with our neighbors, the military.

Joint Land Use Study
Questionnaire/Workshop Responses

I feel the military only enhances the community with military personnel boosting the local economy and housing markets and the bases providing many jobs for local residents.

I have only one problem with the military bases and that is that I live in the area of 54th and Oakes where we are bothered by aircraft noise. Sometimes it can be a very intense noise. I would like to see it reduced. Other than that I don't mind having the military for neighbors.

Military aircraft - right over our house - very noisy and much pollution of black soot on the roofs, window sills, etc. Have to wait - when in the yard - for the planes to fly over before we can hear anyone talking right next to us. Sea-Tac seems to have taken the noise pollution very seriously but we have never gotten any help in this matter, sometimes the windows even vibrate.

No problems.

Very favorable! We are very aware that the military facilities were here long before us. If we had any complaints about the presence of the military bases and their activities, we could move much more economically. The noise from the bases aren't as bad as the noise generated by the "boom boxes" (or radios) the young folks play as they walk or drive in front of our house.

90% positive affects. For the 10% negative like artillery and aircraft noise if I didn't like these things I didn't have to buy property in the area. I own a vacant lot and a rental house at 74th and So. Prospect. My wife is going to buy a daycare center in Lakewood.

Increased traffic, more income.

Provides stable incomes for families which support the economy, unfortunately lower ranks are generally poorly educated and have no "roots" here. They tend to create second class neighbors.

I think that those people who work on the bases should live near the bases. The benefits would be things like proximity to daily work, less traffic from distant neighborhoods, more common focus in community affairs and needs; people who do not work on the bases would find more available housing away from the bases, would complain less and be happier because of less jet engine and artillery noise (since many don't have adequate ear protectors). To reduce noise and air pollution, I think the N and NE perimeter of McChord AFB should have a buffer of many tall, evergreen and deciduous trees (even along both sides of I-5 as much as possible).

Its an asset.

The military post provides a greenbelt and wild life environment in vicinity of the urban sprawl.

I believe the military has been a strong asset to our community. Economically, socially and a positive addition to the medical community. Very positively brings stable, educated, responsible citizens into the neighborhood.

Higher auto insurance rates because military base included w/Tacoma. Higher crime rate around base are a (rape, burglary, robbery) oriental ghetto and concentrated oriental businesses bring with it, increased prostitution, drugs, and crime. Increased traffic and accidents.

Basically we have no problems except:

- (1) "Bombs" or loud noises should be restricted to 8:00 A.M. to 7:00 P.M. hours.
- (2) On the land bordering the reservation, no soldiers should shoot fire arms within 5 miles of the borders to residential or other property.

The military has always been good neighbors.

Very little. The military has always been good neighbors.

Insurance rates for automobiles are higher because of military driving and some companies won't insure Tacoma residents because of military.

The military post provides a natural green belt --- to our urban sprawl.

They boost the economy of the city's of Lacey and Olympia by home rentals and family expenditures.

Good.

Great!

Asset.

Positively. They add to the community in economic base and community service.

It's great.

I was born and raised in the Puyallup-Tacoma area, since 1955 I have lived in the McChord flight path. The feeling of the sound of the planes is one of security and the noise becomes very irrelevant--we have military neighbors--they have been pleasant to have. We also have military tenants.

It's a mixed bag. Pros: (1) It keeps us conscious of our debt to the military for protection. (2) It brings money to the area. Cons: (1) Gives Parkland a highly transient population. (2) Which diminishes sense of community. (3) Which leads to higher crime rate.

The community benefits in many ways always positive.

It boosts the economy.

My late husband and I owned 20 acres, bordered by Ft. Lewis, and Weyethauser--I still own 10 acres off 93rd Ave. SE (Wooded acres) The military were, and are the best "neighbors" one could wish for. At least, they did not shoot at my grand children when they come to visit after the death of my husband. (One neighbor did this.) The main reason I decided to sell. If your ranch is not a safe place for your friends and family to visit then its time to move.

Low flying aircraft (C-130's?) sometimes well under 1,000' when they use the airstrip that parallels 8th Ave. So (Harts Lake Rd). Creates noise/danger (ft. Lewis only).

For the better.

Because both bases are where they are we are unable to have easy freeway access, which make for lots of traffic on both Pacific Ave. and the Spanaway Loop Road. Car there be a road to go through to the freeway ever, we really need it.

Noise sometimes, however, I would rather have the military as a neighbor than some of the trashy people who live in the area.

Without the military there is no community. The bases were here before all of the housing was built. If they don't like the noise move somewhere else.

They are a definite asset to the community. I believe many of our businesses would go under if it were not for the military.

Main complaint - the noise from McChord damages my windows and my sleep. Also believe it affects my blood pressure negatively. Any way to cut down the noise?

Sometimes noisy, but otherwise the community and military relations are good.

The community benefits by having the military as neighbors. (1) Payrolls for the civilian personnel employed on base.

(2) Local purchases for materials used on base.

(3) Contracts for construction jobs awarded to local companies by military.

(4) By having military available to rent housing and shop in the community. (If the military was not our neighbor our community would miss all of this.)

We are retired military and anyone should know with out our money retired or active our community will fold - we need the money to exist.

Local economy is bolstered however, at a price, environmental and noise pollution and increased vehicular traffic.

Joint Land Use Study
Questionnaire/Workshop Responses

Many military officers, enlisted persons and civilian employees give of their time and money to help the various activities, churches, civic programs, senior services, schools, benevolent groups, boy and girl scouts, etc. I wish the commissary wasn't there. It competes with local merchants.

A plus.

There are occasional artillery or firings on ranges at Ft. Lewis, but I am used to the sounds after 30 years in the service.

Air noise from McChord AFB.

No ill effect. However, night activities tend to be a little irritating with noise.

Good for community.

More drugs.

Very loud, low-flying airplanes, rattling my windows, reducing my property value.

Noise, extra traffic.

Stabilized economy.

Good.

In most ways it has been very positive. We are very sorry about the closing of Woodbrook Dr. but with that exception the military has been very cooperative. Many of our neighbors are retired military.

None.

Heavy ground and air traffic. More noise associated with air traffic and artillery (heavy weapon training day and night). Constant rotation of people at bases from and to other states and countries. Very cosmopolitan and diverse community. Large payroll very important to local economy, making area almost recession proof. Increased road side litter by mostly "out-of-staters". Large tracts of valuable land including forested land not available to developers and not subject to taxes. Toxic storage sites adversely affecting environment, especially ground water.

Military requires services which increase the tax base. Also creates noises (gun fire, helicopters, airplanes, etc.)

Thank God for the military. If it weren't for them we wouldn't be free. They have to be somewhere and they were here before most of the rest of us were. Don't pick on the military. The planes, music to our ears.

Joint Land Use Study
Questionnaire/Workshop Responses

Our schools, our housing as well as the taxes generated from their paychecks. We have not found any problems having them as neighbors. And many retire here from the service a credit to our community.

The military is a great neighbor. Many fine people are attracted to and choose to live in the surrounding area because of the military.

The military is very helpful.

I think it is foolish to change anything.

Our property is undeveloped, however, if we did live there having military neighbors would not present a problem. Until they started having maneuvers in our back yard.

Skilled warriors. High alcohol and drug users. They were here first and houses built up around the bases so the noise level is bad in some areas. The bases must remain closed. No cross base access. I live under the flight plan and not too much until they do touch and go.

Large turnover of people some good, some bad. Noise. Military are good for our area. I like having them.

It is always fluctuating with the ebb and flow of world events, economic conditions. As the military comes and goes so the local economy ebbs and flows. As the attitudes change so do relations between civilian and military. A new respect has come because of joint efforts to solve past problems. Patience and respect seem to be the secret to better relations. Awareness of both factions needs help also.

Noisy - More crime due to topless clubs, prostitutes.

Not a problem. Its great to have them as neighbors!

Mixed blessing; economic benefits and additional services needed. Crime rate higher, but on balance military good for area.

In terms of economics, they are invaluable. In terms of human beings, they are good neighbors.

Tremendous noise!

Haven't the slightest idea; but I think it would do a world of good.

Natural area close to Olympia.

These are some of the most asinine questions that I have even had the misfortune to read. If it wasn't for the bases in this area there would probably be 40 to 50,000 people out of a job; the city of Tacoma would be half the size it is now, and I for one would not be here without the military services that are available. More control should be had over where and how close to bases homes, apartment complexes and whatever are built. Military were here longer than those that are complaining.

We are military. We shop and buy at retail stores putting our money into the neighborhood.

Noise! From jets, helicopters, cannon fire and impact.

I don't know there my house is rented out, so cannot answer your question.

Have been locked out of the reason we purchased the land to be able to ride horses on it. Also the very real possibility of having my place burned down every summer by fires caused by the military.

It is a plus.

Positively most of the time.

More jobs for supporting industries, clothing stores, food stores, car lots, etc. Sell more merchandise to military of their families.

Planes are too noisy - from McChord AFB. How about changing the flight pattern to further south for incoming and outgoing planes.

Improved.

Lakewood is a military area. Homes, schools, businesses are dependent on the military. We support them and without them the area would fold. In fact, so would Tacoma, Parkland, Puyallup, etc.

I think positively. I recognize there's problems with aircraft noise artillery etc., however, I believe there should be buffer zones to respect and sanctify the military missions. No construction in clear on approach zones.

Positively. It provides jobs to local contractors and profits to local businesses. The military community is made up of mostly conscientious, clean law abiding citizens.

I live under and to the east of the main approach/departure route to McChord. I've gotten used to the noise--kinda miss the F-15's. I live south of Tacoma Mall just east of the freeway.

When the big trucks drive by the house they send big clouds of black smoke all over our yard and fields.

Yes. Jet Noise.

Benefits - Added income for state. Security for residents.

As far as we are concerned, we feel our community positively (overall) benefits in just about every way to our community. Keep up the good PR.....

Positive - Added economic boost, multi-cultural experiences through other than white middle class. Negative - added population to traffic,

schools, pollution, utility needs, drug abuse, crime. No near or direct access to I-5 some occasional added noise.

It provides a good chance for military to get hooked on the North west and stay after they are discharged.

Very well. Financial assets to legal businesses. Congested freeways, short term rentals - turnovers in school populations of students.

I could not truthfully say as it has been a part of my life all of my 74 years. It is part of us. As far as I know all has been well.

The military are fine neighbors and they bring a vast amount of business to the area.

Many ways. If the military left this area Tacoma would be a ghost town in six months.

More cooperation - same as #3 - our rights in the community.

For the most part our houses and business buildings are occupied. For the worst part rampant children and the use and sale of drugs, etc. is common.

Good citizens settle here. The military family is an elite part of society who are good leaders. Why are we picking on the military?

Pollution by military of their reservations at who knows what cost. Our community winds up subsidizing social services for dysfunctional military families--children born out-of-wedlock, domestic violence, child abuse, children who are poor students or special education because of their lack of family with any kind of notion how to behave. This goes to school costs legal services, court time and public entitlements.

There is no doubt that economy is boosted by having military personnel and their dependents living and working in our communities, it is difficult, however, to truly support the ideals and concepts of the people who work for the military. I am sure that a fair amount of revenue is generated by paying you for something that won't change.

Higher real estate prices. An unwanted highway strip supported by G.I.'s. Tacoma City Light giving Ft. Lewis a break on rates causing my prices to be higher.

They were here first so no complaints!

A positive affect because of economic impact (retail, housing, job force, etc.) A negative effect is the noise pollution, too much vehicle traffic, and not much emphasis on car pooling.

Our community is benefited by the presence of the military as a neighbor.

Too much noise - more crime.

Joint Land Use Study
Questionnaire/Workshop Responses

There is more noise, but if you think of the purpose of the military, you just think of the job they do for us defending us and we can tolerate the noise!

The traffic terrible at the signal lights at military road and Spanaway Loop. A westbound vehicle on military road attempting to make a left on to Spanaway Loop can tie up traffic through several signal changes. I had read that there was a plan to extend 174th St in Spanaway to continue to the road that goes to Madigan Army Hospital. Is it going to happen?

I live near 74th and Oakes. Aircraft noise is significant. The Air Forces continued courtesy about operating hours is appreciated.

Our community is exposed to noise and air pollution from McChord Planes. I don't know which is harder on the nerves - the arrival or departure of a C-5 in the middle of the night or the constant circling of C-141s for practice landing and take off's, the noise, and exhaust pouring out over our property in a black stream. There is much to do about the "Aroma of Tacoma" - it is a prime subject of the EPA and air pollution agency but the constant over-flights impacts all of City of Tacoma yet the airport seems to be considered a great asset. The majority of the homes in our area and in So. Tacoma were not "jet age" built. They were built in the days of smaller planes - shorter take off and less noise with the approval and encouragement of the Pierce County Government (Planning Dept. - Commissioners) etc. McChord has grown over the years. Larger planes - more activity more noise and pollution - We have financially subsidized the Air Force and their civilian employees through deteriorated real estate values, acceptance of our properties on the resale market, and less than desirable living conditions. Have seen rosy studies on the economic impact of the military on State of Washington none of which have considered the individual contribution such as our loss. There should be a re-evaluation of the costs to the people of Pierce County such as: The added cost of law enforcement. Cost to Clover Park School District - do impact funds cover actual cost? Tax loss from cigarettes - liquor and non-food items to off base personnel and retirees. Cost of additional county services such as roads because of such a large area of non-taxable property. We have lived here for 41 years and have been very active in zoning land planning meetings and studies, have conferred and petitioned in an effort to retain a liveable community we could be proud of. We are not proud of the results, and there is nothing we can do about it!

Many families are transient with problems. Schools are crowded and highways, etc., are impacted. The military families are more stressed. As we see in the large number of child abuse cases.

Too much land that is tax free. Too much aircraft noise. Too much noise testing aircraft like 4:00 A.M.

A wonderful and necessary neighbor.

They boost our economy.

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Joint Land Use Study
Questionnaire/Workshop Responses

Our neighborhood is deteriorating more homes are becoming rentals - A big percentage of the renters are military. Transient occupants usually do not have the same neighborhood pride and keep places up. Asked a real estate agent why so many renters - his opinion was that resale appraisals were low because of aircraft noise and homes were being rented out instead of sold!

Noise, blocks access to I-5 corridor, increased crime.

The last few years the old cow fencing around some of the reservation was re-done, which unfortunately means we have to ride a mile down the road (on horseback) which is very dangerous. The money the military spent to do this is absurd because the border is only 1/2 fenced. The garbage dumpers still have access to sneak in and dump. At least small gates should be allowed to let people w/permits safely on the reservation.

Noise is a prime concern, development should be closely controlled especially at both ends of the runway. Good flight patterns can mitigate, to some extent, the balance of the flight patterns.

The mobility of their work make for transient housing. Absent landowners making for uncaring neighbors. Run down housing, messy yards and lots of junk cars left. Single parent homes.

It is all favorable in my opinion. Although never stationed here, I chose this area as my military retirement area. Obviously, the large military/military retired community is a major economic force for metropolitan Tacoma. The "noise" of maneuvers and of aircraft is the noise of freedom (just ask those around the world who have lost their freedom).

Negatively because Tacoma needs more talented and capable people. Too many of the lesser capable people stay. This is not the military's fault, or the fault of those in the military, or a depreciation of those in the military, it just happens. Tacoma is overwhelmed.

A lot of traffic at times. I feel some neighbors could be a lot cleaner. A lot of people just dump their remains in the rehabilitated areas, that animals have clean area to live in wild. I don't care for the aircraft noise and blooms when my walls shake.

They help protect us in case of war. I enjoy having them here. They have opened new business and increased people.

Noise from aircraft operations at my address (north of base). Some gunfire noise from Ft. Lewis. Stores are filled with military shoppers. Their are ----- on library, school, police, etc., resources.

I have no problem with the military as is.

Way too much low flying aircraft! Some danger from ordinance errors.

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We are not affected by the military base as a matter of fact many strangers come to me to be helped how the air show could be watched on the day of celebration. It is good to have the military base close by.

It's not!

Without the military we would be in trouble economically.

Ponders area, Lakewood and Tillicum are areas that depreciate joining areas. Taverns, adult book stores \$10 motels invite criminal activity, depress land values and continue to spread.

The community thrives. Real estate is positive and the schools are subsidized by the FED because of military dependent children. The military gives to the community and does not take as some businesses.

I don't feel a direct effect except for some noise I am accustomed to.

Positive economically.

All the military complex and military citizens provide an increasing economic development for our community.

Economically they are an asset. Without the military payroll, the economy would be affected. They buy homes (which we did) and pay taxes (which we do). If the noisy planes are a problem, don't buy close to a base--the sounds are music to my ears.

Artillery/Aircraft Noise.

Military neighbors are great. They pay taxes, whether renting or owning and the government pays extra when their children attend schools. All I have known keep up their property. They are good neighbors. Lakewood and Tacoma need the military payroll.

Traffic - contributes to gridlock; Housing - consumes affordable housing; Economic - Large shifts in troops affect existing consumer infrastructure negatively; Social - Considering diversity (social), excellent neighbor.

There are both positive and negative aspects, but with the generally positive attitudes of the local natives our community is more often positively impacted. Some involvement to an extent is experienced in all our lives in this area.

Variety of student, neighbors, co-workers in smaller world as needed to negate fears of unknown.

Little noisy at times but as long as there is a Fort Lewis and McChord it is good for Pierce County.

JOINT LAND USE SURVEY
QUESTIONNAIRE RESPONSE

QUESTION:

2. What are the benefits your community derives from the local military presence?

RESPONSES:

Probably commercial spending.

Employment and being able to buy cheap is or are the benefits of the peoples in this community.

Employment - local trade

It adds to the population of small town

(1) Protection; (2) Economy; (3) Using their talents to put on musical events, participating in parades, and most of all to help keep our country free.

Chiefly money. Medical facilities, commissary, PX's, etc.

The bases preserve land and that is vital because greedy developers cannot use this land, quality of life decreases with the drastic growth.

Good for the economy, creates jobs.

The military brings a great deal of income to our area in many different ways, housing, services, etc.

Safety for all of us Americans and the world!

The government pays the State taxes for the fort and other areas used, plus fort buys food for the commissary, clothing for the PX/BX stores. electric for base housing and buildings on McChord and Fort Lewis.

Economic only.

If we did not have a military presence, our local economy would be severely effected.

More preserving of trees (i.e., on military reservation).
More money in the economy. More people in our churches.

The extra jobs is a very good bonus.

I have done business with the military for over 30 years - they are fine.

The extra jobs are a very good bonus.

Joint Land Use Study
Questionnaire/Workshop Responses

Unless you own a business; none.

They certainly promote commerce which allows us to have many conveniences that wouldn't exist if they were not here.

Financially the bases are a big advantage to those in business. If, as in Killeen, Texas, operational shifts cause a suddenly lessened presence, the massive change can work havoc.

Many.

It is prestigious, especially after the Kuwait success. Provides jobs for civilians. More persons to share the tax burdens. Provides customers to purchase many things from the business community.

Good economic base some jobs.

Employment of local citizens.

Military personnel spend money in community; goes to community colleges; bring people from all over USA to area, steady income for stores/shops, retire personnel bring organization skills.

Positive; hunting, fishing and horseback riding permits, business and rentals increase. Money spent here by them help the economy of the area. More jobs are available. Many benefits.

--The benefits all go to businesses including house and apartment renting.

Income; assistance and contributions to service and charitable organizations, military personnel, in general, are better supporters of this type organization than civilian counterparts.

Economy stabilizer - Some high quality people in military benefit community.

Added business - sense of protection.

Aside from everything else, the economic benefits of individual/family consumers and the employment from the community to the installations and the contract dollars that are expended in the local community by subcontractors and minority contractors in our community. It aids in maintaining a strong economic base in our community; also, it brings a cross-cultural "flavor" which I think is important.

We enjoy a good economy.

I see it as both a curse and a blessing - it offers the illusion of security and at the same time there's the fear of living in a potential target area.

Increased payroll and moonlighting workers. A younger population.

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Ideal renters, community support, I believe more money and political - --- for much needed programs are available when they are present.

Ft. Lewis and McChord okay for So. Tacoma as I see it.

The biggest thing our community derives from the military is security. Jobs and money and cooperation.

Merchants basically - rental owners.

Income; a good housing market in selling and renting properties, also sales of all sorts.

They help keep the economy going strong, by creating a demand for products.

Feeling of security.

This is a question that needs much more space to answer completely. Let us check our history of the area (for at least 50 years) and we can realize that the military presence (along with port of Tacoma and many other assets) have been the backbone of our economy.

The military brings a high degree of certainty and only slight fluctuations to the overall economic climate of the area.

More business, rentals, payroll

Money and business

Jobs, government funds and assistance

They contribute taxes, finances and educationally to this community.

Economic, Cultural.

Only job employment.

The military needs to live somewhere and they are usually nice, dedicated people.

Much needed revenue.

Jobs, government funds and assistance.

Contributes to local businesses.

Open space/green belt

Immeasurably!

Incalculable

Less Density; Lots of Open Space

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I think if the "thinkers" would use their heads and take a look at the financial benefits derived and the number of military retirees we have attracted it speaks well of the climate here between the two.

Economic, social, interracial. All good.

No negative benefits.

Benefits to community: probably an economic boost--local shopping!

Undeveloped green belt that is enjoyed by permits (free) issued by range control. They allow hiking, horses, etc. (no motorized vehicles with which I agree).
Plenty of business.

Help the local economy.

The benefits are so many that they can't be mentioned here. Just start pulling military projects and 2/3 of the community will fall.

I believe many of our businesses would go under if it were not for the military. They provide stability to business and housing.

Too numerous to mention.

Economical.

- (A) Economic.
- (B) Military units always take part in such activities as food drives, Thanksgiving dinners, Christmas gifts, etc.
- (C) Employment civilian jobs on post, renting housing, buying locals, etc.

Money and Taxes and most of all keeping us at home safe.

Jobs!

More jobs--more income--government contributions to schools.

Renters in Dupont, post office, the store and home owners all impact Dupont. I have paid city bills for 12 years, there is continuity in active and retired military.

It is close to work (Ft. Lewis) (I'm in the Army). Madigan is close, main exchange stores and the commissary are close by.

Economics.

Responsible people, and cash flow.

Like the rest of Tacoma - Economic benefit.

Great economic impact.

Good neighbors.

Safety and economics.

The military has taken interest in community affairs and are a positive influence. The mast program has been a real plus where their helicopters pick up injured workers and skiers.

It provides jobs and allows local businesses to prosper.

Large payroll provides substantial support for local area businesses. Constant influx of people has a positive affect on real estate market and rentals (few dead beats). Keeping large tracts of forested land away from greedy developers helps preserve our area and quality of life. Troops and helicopters are available for emergency use during natural disasters. Provides access to people from all cultures and from all states and countries.

Do not feel we derive any benefit. The military increases taxes in the local area, because we have to provide additional services.

Look at the money they pour into the local economy community. Just knowing they are here and ready to go in times of conflict should be a comfort to everyone.

We certainly need the money derived from their pay checks for rentals, food, etc.

Business benefits from the payroll of the military as well as the people who visit the area to be with or to spend time with family or friend in the military.

They do a lot of good.

None, since our property is East of the military reservation. We probably suffer more from isolation than anything else.

More jobs greater income base, transient people but income producing people.

Boost local economy, military reservation, I like to see all the trees, the turn over of people you can get some real good people. The military also do community service, helped in flood, search and rescue mt. aid fire fighting.

Big positive economics impact. i.e., salaries and contracts and hirings.

Steady income. A good variety of people who appreciate what this state has to offer for a good family life when we do not try to emulate the larger, more over developed, types of cities. For the children they

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meet others who have had to make mature adjustments while so young, a good object lesson.

There are more jobs because of the military.

I don't believe there are any benefits.

Safety, secure feeling, lots of military money.

Economic Stability.

Jobs.

The benefits would be to the community as a whole.

Economy.

Be 40 to 50,000 people out of a job; the city of Tacoma would be half the size it is now, and I for one would not be here without the military services that are available.

The money put into the community either by us renting. Shopping, etc.

Please do not allow hunting on the reservation--there is so much danger in allowing hunters onto areas like area 15 that border residences. Also, there are so many humanitarian and economical reasons to stop releasing hand-raised birds which are 30 minutes later blasted out pieces. The rest of the animals (and apparently much of what moves out there is legal to shoot) are in short supply. It is just time to disallow all hunting and trapping, with the possible exception of coyotes which are a problem in the area.

It gives a certain corrective feeling over all.

Monetary.

Protection from invasion. Federal funding associated with military job possibilities.

Retail merchants derive the main benefits.

Permanent open space.

Our schools are doing well, our business flourish. Our homes are filled with good neighbors. However, over building apartment complexes and quiet shift of persons causes ghetto like housing. We don't need this. Prices up and respect stays!

Tremendous financial assets. A very real stability during area community economic down turns. I came with the military and have easily spent \$250,000 in the area. Multiply that by thousands for full value.

If benefits from militarily sponsored non-profit efforts such as care-share and active support for local social services to children's programs.

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Economic - services, such as mast. Cultural (many cultures represented) - medical (mast - Madigan Hospital)

I am sure the local business benefit as do the schools, etc. by the people in the military.

Economic benefit a plus!

Affects noise concerns. Poor access to Yelm.

Economic, environmental protection pride great people (and no we are not retired military).

Money, cultural, some sharing of resources (evac. helicopters)

Many jobs and businesses depend on these purchasing power.

School funds - stability of economy for the military families.

School funding and our churches have military members as far as the jets noise is concerned it is again just part of my life.

Increase in rentals, housing and new business.

Most of our lively hoods.

Good for local businesses when they can get to them.

Our economy remains stable. It could not be forcible without military presence.

Economic security. The payroll and the purchasing power is unmatched by any other industry. An opportunity to meet people who are from other states.

Lots of short term cash, if such can be considered a benefit.

It all comes down to money, doesn't it? It is nice, however, that the private sector allows for opportunity to those who are from outside this area and it keeps rental property generating revenue.

Since I'm not a businessman, and my labor job is not affected by the local population, none.

Great golf course - Commissary and base exchange less than a mile away.

Economic pluses - some contractor and federal job employment opportunities. Variable positions and values introduced by people from outside the local area, equals better citizens, politics, and neighbors.

The two prime benefits are financial and protective, as well as civilian employment.

None I can see.

Protection. Economically betters our community.

We mingle with new Americans and respect their customs and traditions, absorbing exciting recipes, styles, dances, festivals, and their abilities to enrich our lives.

Their payroll.

Well naturally the military are a major economic plus for the area. But the military should do more for their own families.

None.

Should be obvious, business!!!!

Deterrent to gang activity. Protect area. Provide emergency assistance.

The military in Pierce County may be good for rental people, retail business, food and entertainment, but I am afraid most of the big contracts usually go to out of county - even out of state suppliers and the residents of Pierce County are stuck with cost of extra services and pollution problems.

Businesses benefit.

The land available for permit holders to use.

The dollar impact, employment. On base education for certain degrees, affects dependents, retired, active and reserves.

Cash flow.

Economic (payroll, local purchases and contracts). Security and emergency assistance (if you have a flood or other disaster the military field kitchens usually feed the emergency force). The area attracts military retired personnel, reinforcing the economic impact.

Money and an economy. Tacoma must depend on the military because there is too little activity in rising industries.

They provide lot of jobs and business need their pay. I hope there are more military bases open.

Military personnel spend vast amounts of money in the area. Civilian payroll is high. Some area rescue service MAMC provides some emergency medical support. Real estate activity high.

Economy for the area.

We are well protected by the base personnel in many different ways.

Jobs, mine!

Many jobs - much economic value.

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Obvious benefits are the increased funds stimulating local economy, multiplier effect providing jobs and need for additional housing. Certainly increases need for rental properties. Increases tax base for local municipalities.

A great deal of money is put into the local economy by soldiers and their families. Military families are not social deviants or problems as are some groups of people.

I am happy to have a nice forest saved by the military reservation.

Needed by many local businesses.

Besides economic, there is a definite need to have the military people at all levels know that they are needed and that we care. We should be an equal or greater benefit to them.

It shows the non-military community how a justice system is supposed to operate. When a GI breaks the law he is punished, therefore, crime is almost non-existent on bases. I can leave my car unlocked on base without it being stolen or looted. There are no speeders on base either.

My community does not benefit with any greatest from the military.

They serve in community activities - PTA, Scouts, Campfire, Special Olympics and others. Retired military serve on councils, Seniors Against crime, political issues.

Large employment and consumer base.

Primarily by economic enhancement due to my involvement in a retail business and real estate.

Income, variety of jobs and languages. living conditions.

Economic benefits.

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JOINT LAND USE SURVEY
RESPONSES TO QUESTIONNAIRE

QUESTION:

3. How would you like things to be (in an ideal world, how would the military bases and surrounding areas relate to one another)?

RESPONSES:

I would like to see a freeway link across McChord - I-5 to Spanaway.

They get along very well.

Joint cooperation continued as the military presence is needed, especially economically.

In this ideal world, the military and this surrounding areas relate to one another as follows: people from the base live in the surroundings and people from the surrounding work and buy in the bases.

The military community can help by letting the community know what their needs are and visa versa.

I have few complaints. Services often too arbitrary at times as in Woodbrook closure. Cross base access road very desirable. Slow environmental responses.

I wish the military could possess more land just to keep growth down.

Note, Silver Creek area is between Rainier and Tenino.

I would like to see the new landfill (proposed to be on 304th and Meridian) put on some of Ft. Lewis's acreage. The garbage company has 300 acres + of view property (mt.) and on a main highway, why not on a hidden spot on Fort Lewis?

Be fair and just and show compassion.

The military protects the Northwest, if the cold wars was to pen in another part of the world. (Far East) China is still not to be trusted, we need military.

More access to base range area. Especially open tank crossing bridge for river access current conditions severely limit easy access to the Nisqually River for no reason!

Cross base access roads should remain open. There should be a compromise between the citizens of the county and the air force over Woodbrook Dr. such as maybe limit access to Woodbrook Dr. to daytime say from 6:00 A.M. to 9:00 P.M. daily.

I feel its a safer place to live. More variety of shipping. Prices are a little cheaper. I feel the children need more--also better fishing

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areas open to the public. Guys love to fish--close to home after 8 hour day.

All complaints (either by phone or letter) should be answered by a person in charge of that area by a return letter! Let's not pass the buck and never get things done. I think the losses should --- to serve as a buffer to development. I would like to see a direct Fort access road from the Yelm area.

Free rides for civilians in military airplanes. More use of computers for chess games.

Like now is fine.

Couldn't ask for better neighbors.

Cooperation - mutual concern and respect for each other.

I have never been aware of any problem, especially with today's volunteer services. Our condition in Pierce County is nearly as balanced as it could ever be. It is good!

In the short term - Stop all training flights over heavily populated areas. In the long term - Close McChord Air Base - A heavily populated area and a military air base are incompatible and McChord is eventually going to have to be closed.

Let them conduct their business without our interference and we will expect the same from them.

More on base housing built, less off base apartments, free access to range land for hunting and fishing especially designated public hunting areas, pay taxes on base property. Employ local companies for projects rather than bringing in contractors from out of state.

By joint discussion/agreement on land use between civilian and military leaders prior to any action.

Like they are.

Not be as isolated; join in community; have community a part of the military bases, i.e. open houses, community military events eg. sports, socials, environmental projects.

Continue the above privilege under #2 in a control situation. Use Spanaway Lane (on Ft. Lewis) access to 176th St. for traffic. (New special forces billet on Ft.)

Buffers around bases. Environmental protection. Better communication and coordination between Military and communities.

No comment.

All military bases should be in isolated parts of the country especially the aerodromes.

Better understanding - especially from people who do not realize that the military is a good neighbor (but not necessarily the other way around).

Military should seek to provide more services for lower income noncoms. Military should help with improved roads and buffer zones.

I would hope that they would continue to be compatible.

I like things the way they are even though a constant effort should be made toward improvement. I would not like to see parochialism either on the part of the community or the military diminish the present relationship.

Maybe they could help patrol surrounding areas, help stranded motorists, report illegal activities, etc.? Maybe more local businesses could offer military discount?

There should be a vast green belt around the bases, owned by the government.

More communication is necessary, no secret sessions, more private citizen voices are needed. Must do what sensible can be done to protect all environment and people issues.

Fine!

The military retirees help the peoples in area get along with each other, we must remember the military want what the civilian want, security - good place to raise their children.

Realization of the infringement on a community as to noise-follow-concern for residents-reduction of property value.

Since there is no ideal world. We can't bash the military one day and praise the next. We have to live as good neighbors.

On a daily basis (not only during wartime) local residents should respect the military presence more. Likewise military personnel should extend the same courtesy. Respect.

In an ideal world there would be no need for a military base because there would be no conflict. As it is, I don't have a problem living near the bases.

Harmony!!! No more construction adjacent to bases. No cross base access roads (for security reasons). Let the military concentrate more on their main objective "protecting our country"!!!

Fort Lewis and McChord have been ideal neighbors to the surrounding areas. It is true "fences make good neighbors". I don't believe a cross base access would benefit anyone in the future.

I think relations between the surrounding areas and military bases have been very good for many years.

Military needs to improve lower end enlistment quality so they will what to be more involved and care more about the community.

An ideal base would probably not have communities all around the base, but would be located at one end of a community, like on a peninsula or coast, or other natural barrier.

As they do now.

There should be no micro management of the military which will interfere with their mission and objective.

Equal cooperation from the civilian and the military.

Good neighbors on both sides.

Keep completely separate! Additional tax upon our services.

The same way it relates now.

Much in the same way it relates now.

Have military and dependents do better driving so insurance rates will decrease and not go up again!

There should be no encroachment on the military post which will interfere with the mission of the service.

By keeping things under control as to over development. Helping protect the environment.

My only complaint is sometimes they fly helicopters too low and it bothers the animals on my property.

Good for the economy and nice people!

As now - no problems!

There are no serious problems now, so why try and fix something that isn't broken. I am not a military employee.

Just like they are.

I am rather "sick" of the attitude of some of the chronic "rabble rousers". I know some of the "head-line grabbers" personally and that is just what they are!!!

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With increased community interaction, to increase sense of community.
The use of the bases to distribute food to our hungry in the world.
Positively.
The noise and booming of Ft. Lewis did not and will not bother me, either on the 20 acres, nor the remaining 10 acres.
To remain undeveloped. Rumors indicate a freeway or major road extension in the Roy Y area.
Military families are good neighbors.
I don't know.
Have the civilian and military work better together. It must be realized that we can't survive without the military. The bases must be secured I don't think there should be any cross base.
We could be blinded to the benefit the military provides. We believe it is great the way it is.
More integration - less separation.
Each would contribute their best efforts to aid all.
Have the community leaders be more understanding to military bases priorities. Such as firing ranges access to base by off post personnel and cross base access roads. The bases were our neighbors before most of the apartments close in were here.
Love and learning to accept our neighbors.
Military and local government and schools should share responsibilities for political, educational and service needs of the combined communities. Including road revision and maintenance.
Each can benefit by knowing more about each other and working together to enhance all associations.
Its fine the way it is except for aircraft noise.
I think the military and surrounding areas relate quite well.
To be more receptive to the military people and bases. They are human like us and will give their lives if called to war, you cannot ask more of anyone!
Let it me, Ft. Lewis is the only place in Pierce County (that I've seen so far) with trees, our family likes to explore in the woods in Ft. Lewis.
As good neighbors.

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Acceptance as good citizens.
Move Army to King County, they want everything else.
The military should treat the community just as each individual wants to be treated - considerately.
In my opinion, the trade off is worth any discomfort.
Joint use should be encouraged.
Excellent.
I think we should continue to cooperate with and blend military personnel into our community we will benefit as much as they do.
No difference.
Use media more to explain necessity of training/flying exercises. More tree buffers to control noise levels where appropriate. It is essential that construction not be allowed within clear and approach zones. Otherwise, we could lose McChord for military (or civil) airport use like happened in California and elsewhere (encroachment forced shut down of air operations).
When and if the military ever leaves; leave the area as an open preserve (no development) only the I-5 corridor.
Quit building so much. Stop cutting down trees. Need a more peaceful atmosphere. Its already too clouded here. It's no longer a good place to live.
Friendlier - more cooperation between locals and military seems we judge all military by a few.
Better utilization of the military land for recreation when not used by the military. We also need a freeway link across Ft. Lewis or McChord to be able to access I-5. It could be underground in the airport area.
Keep that way.
They (military) must kept the property clear/clean of toxic vegetation, etc.
Compassion and caring, a small world.
Fort Lewis would grant and/or sell scenic easements. Fort Lewis would install and then maintain fewer on its boundaries.
Strange question?
I think the above answers cover this questions quite well. In an ideal world there would be no need for military but since in our time at least, we can't do without them. The present day military are better

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educated to their part in the scheme of the world so continue to show them the respect due.

Things are fine now!

Military police worked jointly with local law enforcement patrolling the trouble spots.

To live in peace and harmony.

There would be no military bases in an ideal world.

As long as the military are U.S. I welcome and support their presence.

Have peace and quiet.

Personally I think the world and the community would benefit 100% with no trouble.

Common large park for Olympia area (in area little used) would like to see trees kept up on fence lines, to keep fences up, and scenic easements. Also maintain fences.

Maintain fences on the fort property. Allow scenic easements. Create a park.

More control should be had over where and how close to bases homes - apartment complexes and whatever are built. Military instl. were here longer than those that are complaining.

To have civilians quit trying to rip off the military and the soldiers and family.

By Ft. Lewis infantry firing mid day during the week when most people are away at work; by having flight paths over vacant land (+ leave vacant land for that purpose!)

Please open the gate on Woodbrook Drive. The war is over and there is no longer a reason to inconvenience all the local people who would appreciate the opening of the shorter, safer route to Lakewood and I-5. Please do not allow hunting on the reservation. There is so much danger in allowing hunters on to areas like area 15 that border residences. Also, there are so many humanitarian and economical reasons to stop releasing hand-raised birds which are 30 minutes later blasted to pieces. The rest of the animals (and apparently much of what moves out there is legal to shoot) are in short supply. It is just time to disallow all hunting and trapping, with the possible exception of coyotes which are a problem in the area. When we purchased our property on 8th Ave. E., and commenced paying taxes on it, it was because we wanted to be able to ride horses and walk the dogs right across the street on the military reservation. There were no fences to restrict this use, and as soon as permits were required, we got them. About 5 years ago, a fence of barbed and concertina wire was constructed across from our land, beginning about a mile down the road and ending where both sides of the street are reservation. We went to the range control man (a civilian) and requested permission to put in any type of gate, military's choice. He said that his "dream" was to eventually enclose the reservation in 10' chain link, topped by barbed wire. So--thus commenced horseback rides down a mile of treacherous road to where this man said we must not enter. He said they were fencing the reservation to keep out garbage dumpers and bikers. Garbage dumpers and bikers can't go one mile down the road to where there is open access? Please--before a rider or horses gets killed--a gate for safety and common sense - we have permits to ride there - we don't damage or dump garbage - we are willing to put in our own approved gate. Please--during the summer months, run the massive maneuvers in the middle of the reservation, away from the tinder-dry surroundings private property. The danger of fires from smoke bombs, equipment sparking, and explosives is just too great! I've heard rumors of a proposed Sea Tac II being considered close to 8th Ave. So. I'm opposed to this because of noise, transportation, pollution and congestion problems. Please again allow groups to secure use permits instead of making every individual make the trip. I try hard to be a good neighbor to this military (public pays taxes to support) land which borders mine. Every year, I pick up and carry home the beer bottles and cans left behind during hunting season. I have reported suspicious occurrences and even put out small fires. This land is a treasure in the midst of developing sameness, and I do want to help protect it while sharing it.

Stronger military area.

Interact, cooperate, understand.

Federal funding to reduce cost of living in area. Complete commissary privileges for civilians in surrounding areas. Civilian jobs on base to be dominate except for actual military functions. Deferment of income tax for having hazard of military target in the area. No property tax - should be paid by Federal Government - just because!!! This is my fantasy world.

No change.

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As they are! Our schools are full, our businesses doing well. We have enough quickly built apartments. If streets and neighborhoods are at capacity, build elsewhere and don't press onto existing neighborhoods. I think the military should respect and protect the environment fully. Commensurate with solid ecological respect and understanding.

The only thing I dislike are the pawn shops and cheap sorry looking apartments circling bases.

Need some kind of cross base highway between spanaway and lakewood.

Fix their trucks. So they don't give off all the smog smoke.

Try to keep jets on a flight line as much as possible.

Cross base access roads needed.

Actually, being pilots working with CAP we feel communication is good. Promotion and cause good. We knew this town had military bases and we accepted the minor discomfort of noise now and then.

Cooperation, assistance in all phases of need on both sides, more social interaction, etc.

Ideally there would be much more affordable housing off base so that the military and civilian population could relate on a daily basis.

More cooperation with federal and local governments regarding the environment - More local employees in government contracts.

I just wish we could get our community of Parkland back to where it was in the 40's, 50's and 60's with so much tax free property we do not get the attention from the county, nor to people shop locally--we do need help with that. So many military shop at the PX.

Leave things as they are.

Should be no problem. Adapt to the existing businesses within the community and work with us rather than condemning our right to operate.

Could we clean up areas like, Wood brook, 159th are examples of (if I may say the crap people) crap. We need to keep our kids in school, learn, homework, clean-up our area of roadside junk, etc.

Don't fix something that don't need fixing with the military we need good land use planning; quit ruining fertile soil with industry.

Far less aircraft noise, more environmental control, much more notice to citizens re: future action for development on buses.

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We wouldn't need a military, but rather a police to keep our government from becoming corrupt and useless as it is.

Move the Fort Lewis command to Yakima. Saving them the transportation costs to their firing range.

Just as they are. perhaps gates could stay open a few hours longer.

Have McChord AFB become the second air terminal for commercial aviation traffic Vice Paine Field (Everett). Military and commercial airline should be able to work together. This move would give Tacoma an economic boost. Place state or county offices on government (federal) property.

The bases compliment each other. Their presence insures a free and stable nation.

I would prefer they move elsewhere.

The alternative or noise controlling construction materials in new homes sounds good!

Commissaries, BX's, PX's are not necessary in Conarc because these services are ample in all communities with the exception of some remote stations.

We really need a major road across Ft. Lewis and/or McChord connecting Spanaway and Lakewood.

The military would do more for social and health services for their families especially the children of these families.

Move out of state.

That everyone work together for the benefit of the people.

Ideally there should be an acknowledgement of the military presences impact on individuals - there should not be "job making" for some at the expense of another group.

Build road through the base between Spanaway and South Lakewood.

Gates allowed for horse access. Civilians being able to enter into the Fort through the East Gate and Wood Brook Drive opened again, seeing how the war is over, a military check is fine, but allow the civilians use of the road. Hunting should not be allowed on the reservation. Its dangerous for the surrounding community. Trapping isn't controlled well and when getting a permit, I would of liked to know that trapping was allowed. While riding my horse several years ago, my dog got caught in a trap and began screaming wildly. The horse went crazy and I have a very difficult time releasing the trap which was buried in concrete. If I'd known trapping was allowed, I wouldn't have let my canine friend come along! The burning which goes on in the summer, from war games and fire control should at least be controlled. Many times the fires are raging with no one around, close enough to the border to jump the road

and start fires on our land, it gets very scary!! I would like the military to clean up their ----- after they are done spreading and using it. We have lost three horses in the last couple of years unnecessarily. The heavy maneuvers should be done more into the middle of the reservation because of the noise and fires started. Area 15 seems to be a favorite place and it borders the civilians property. Hopefully Sea Tac II will not be allowed on Area 14, the noise, transportation and pollution could be problem.

The military mission must be known, understood and appreciated. Unusual circumstances must be announced by the military and if the mission is appreciated the short lived changes from the routine should not affect continuing good will, local government and the base command structure relations are the key.

Leave the base lands for military, respect, no building near bases especially air. Base provide natural habitats for wildlife observation. Leave civilian development out of military territory.

The recent outpouring of community support for the personnel of DESERT STORM has set a new plateau in military/civilian relationships.

I would like the military to pull out, sell the land at the highest possible price and use the money to relocate.

I would like to see a share ground that's 50% - 50% in that both could work together - law and etc; parks etc; good things for kids.

Should sit down and talk over things and compromise with everybody. Listen to other people have to say.

There should be better ----- to prevent encroachment on noise producing areas of the military bases.

Leave it as it is. My point is that the bases were established when I moved here 48 years ago and I thank god the military is on my side.

They would be located in remote areas where people would not be impacted.

To me it is already an (ideal world). Very peaceful. They are excellent neighboring bases since the last 24 years I have resided in our area. I wish no more developing or building.

Give us a large pay raise, like Congress!

Continue cooperating very necessary.

Control (not limit) development of apartment complexes. Keep them in separate sectors and not mix with residential areas. Maintain low population land uses and development of areas within direct flight path of Gray and McChord Fields. Clean up Ponders and areas of Lakewood.

Bring a full-up division back to Fort Lewis. (The 9th Division was deactivated and only the 199th Brigade takes its place.)

In an "ideal" world we would not need them.

Remain as they have.

Please do not plan a cross-base access road from 176th to I-5 across American Lake Gardens.

With understanding, caring reaching out and be sure that they are all a part of our community too.

Turn the criminals over to the military and our jails would not be overcrowded and we would not be taxed to the max to keep criminals alive that should be punished with the death penalty.

Down grade the size of both military bases.

The military has been here longer than most of us. Fort Lewis since 1917 and McChord since 1936. Let them do their defense jobs without local interference.

Limited Joint Use: (1) Housing: More on-post facilities; (2) Traffic: Through-base arterials with limited access; (3) Economic: Long-term commitments on stable population; (4) Facilities: I.e. land (some joint use) airfield (civilian and military use should not be mixed).

With a greater sense of community involvement--a more family oriented or neighborly atmosphere.

Cooperate and learn from each others needs.

Good for the area.

Joint Land Use Study
Questionnaire/Workshop Responses

JOINT LAND USE STUDY
QUESTIONNAIRE RESPONSE
LAKEWOOD WORKSHOP

QUESTION:

1. How is your community affected by having the military as a neighbor?

RESPONSES:

Seriously affected:
Diminished property values.
Drastically increased traffic on 146th St.
Poor access to I-5 (exit 123)
Drastic impact on Woodbrook businesses.
Substitute road usage ruining surfaces.
Improving alternate routes will be costly.
Ground water contamination--soil contamination.

McChord's closure of Woodbrook Dr.

Increased Emergency services times.

Increased risk medical/fire/police.

Increased cost of emergency services.

Decreased parental access to children enrolled in on-base schools.

School buses must travel on sub-standard roadways.

School buses forced to use I-5.

All access to Lakewood from American Lake Gardens/Tillikum forced to use I-5 including pedestrian and bicycle traffic.

Pierce Transit's costs have doubled in order to serve American Lake Gardens.

Reduced access to Lakewood.

Increased cost of transportation to residents.

Noise-daytime-East side Fort Lewis from artillery negatively impacts new residential development.

Increased traffic from military and civilian--going/coming creates congestion for people living in area.

Fluctuating employment--by cutback of military personnel.

Provides employment--adds to local economy.

Retiree contribution to local economy.

Joint Land Use Study
Questionnaire/Workshop Responses

Promotes affordable housing.

Large area of ecologically undisturbed land.

Military brings in higher percentage of 21 - 25 year olds into a population that's normally there.

Positive economic benefits.

Likes bicycle use on military facilities.

Military personnel provides support to civilian community education and others.

Volunteers between military and civilian communities.

Cultural and racial assimilation.

Convenient for the retired military.

Adverse environmental impact such as groundwater.

Loss of military/force reduction will adversely impact economics.

Adverse impacts from noise, artillery/aircraft.

Contribute to traffic congestion.

Lack of military electors in State and local elections.

Positive environmental benefits - natural resources.

Infusion of new ideas/concepts due to changing type of population.

Negative social impacts.

Military presence results in labor at less than minimum wage.

QUESTION:

2. What are the benefits your community derives from the local military presence?

RESPONSES:

Preservation of open space/authorized utilization of resources.
Tax benefits from military personnel and construction expenditures.
Federal funding assistance for education and others based military population and impact.
Benefits from local federal and military (personal) purchases.
Community benefits from enhanced services resulting from military presence (malls, etc.)
Presence creates opportunity to attract skilled labor.
Bases employ community residents.
People associated with base contribute tax dollars to the community.
- Direct Federal contribution to local tax base, i.e., K-12 schools.
Federal taxes paid come back to local economy through the bases.
Military people active in local community affairs and activities.
Military adds to the diversity of the area.
Provides jobs - long-term employer since before 1920.
Contract with local vendors and businesses for services and supplies.
There are definite advantages - Green belt effect (expanse of same) PX/commissary proximity; medical facilities active/retired and civilian in emergency; beneficial to local economy (stability).
Normally good neighborly relations; recreational usage of reservation; community activity participation by military people stationed here (scouting-church activities--etc.); fund raising for local charities; disaster relief participation; impact funding for local school district.

QUESTION:

3. How would you like things to be (in an ideal world, how would the military bases and surrounding areas relate to one another)?

RESPONSES:

Maintain a constant pattern of activities that create noise.
Provide traffic alternative to relieve traffic on Spanaway Loop Road.
Public stay cognizant of military requirements and impacts on surrounding land use to include noise.
Public recognize the strategic importance of the bases in the military's total program.
Scale down size of military activities. Bases coordinate activities with each other, i.e., medical.
Military command participate with local governments as a "government".
Military does more to help with "social needs" of military personnel and families in the community.
Military community is a model self-sufficient community.
Community would pattern itself similarly to the military in community.
Military would adopt all means to minimize impact on community and maintain their mission at the same time.
Promote more lines of communication and interaction between the military and civilian community: public forums.
More community acceptance of military as neighbors.
Better land use planning by the regulating agency.
Provide land on perimeter of facilities for non-motorized recreation (hold harmless clause estimate).
Make provision for simplification to obtain passes through/to bases.
Surrounding community would not abuse military property.
Vice Versa.
In ideal world, military bases would be national historic monuments.
Mutual consideration and cooperation (without militant overtones)
Return our rightful easement to Woodbrook Dr.

Joint Land Use Study
Questionnaire/Workshop Responses

More open access to bases civilians accept military noise impacts more military/community interchange of discussion.

Mutual respect for property.

More public notice regarding base/county/state intentions of planned projects affecting surrounding communities.

Push for cross-base East-West freeway that doesn't destroy our community.

Joint Land Use Study
Questionnaire/Workshop Responses

JOINT LAND USE STUDY
QUESTIONNAIRE RESPONSE
SPANAWAY WORKSHOP

QUESTION:

1. How is your community affected by having the military as a neighbor?

RESPONSES:

Improved - the military is the foundation of the community.

(A) ROTC starts fires in training area 15 every July! Danger! Military fights military side of fire first and do not go off post to fight any fire. (B) Forestry service on post starts fires on purpose unattended in Springtime.

Affected very positive by the military.

Military improves Property values and overlap economy.

Military adds to community rather than takes from.

Range control allows public use of military lands when training does not take precedence (walk dogs, riding, bird watching, etc.)

Military weak noxious weed control program affects surrounding community poorly.

Military tends to beautify border areas by picking up garbage thrown by civilians.

Vigilant patrolling around border areas by Range Patrol (esp. at night) tends to hold down major crime and petty crime in area.

Low flying helicopters cutting across from SW corner of training area 15 to NE corner overflies civilian pastures and spooks animals, people, etc.

Military allowing right-of-way on many roads (Roy Highway, others) is excellent and considerate.

Military closing of Woodbrook Road affects traffic and access to areas.

Military joins in to community by joining churches, shopping, etc. - retirements.

Community joins military through reserves, etc. training in/around training area 15 at times affect sleep especially artillery firing at night (NW of training area 7). Same is true in Woodbrook. Closed road - Woodbrook Drive.

Need access to I-5, 176th, as far South as appropriate on I-5.

Helicopters flying low - Old Mitchell South East of Ft. Lewis, 208th, close to Roy, noise, rattles windows.

Increased population due to retired military personnel - good.

Woodbrook Drive closure trapped school - finally opened up to pedestrian traffic.

152nd and Loop Road has increased traffic congestion (bottleneck) start and stop work (East Gate of McChord).

Military personnel should abide by landlord/tenant laws and not skip on rent. Total accountability could be appropriate. Military commander's policy should eliminate the problem by requiring accountability.

Problems contacting appropriate military personnel to report problems on base such as poaching, dirt bike riding, garbage dumping, etc. Stray animals dumped.

Social problems associated with density, drugs, gangs, etc., that feed off the military.

Short term residents may not have the same interests and responsibilities as longer term residents toward communities, schools, etc.

Second jobs for active military may be affecting the availability of primary jobs for others.

Are children in military families going to public schools paying their share of school costs?

Additional crime against people and property due to increased density of people.

Fights and beer blasts in Spanaway Lake park on summer nights and weekends. Is this being solved? Need park for families! Military and civilians alike. Is military doing its share of policing the park?

Additional housing demands and increased demands on land fills.

Jail site property (North of 512). County condemn and military purchase and gain control.

Recreational uses: (A) Preserve permit process (horseback riding, etc.); (B) Areas open more often (Areas 7, 8, 9 & 10)

Economics, (a) stable; (b) influx of Federal money, (c) high auto insurance rates.

Medical facilities.

Noise impacts, vibration (Pacific Avenue/Spanaway Lake).

Traffic congestion (general problem), Spanaway Loop.

Junk cars (South of Roy "Y"), (a) Work with St. Patrol on military property - not removed; (b) Used as alternative dump.

Resource, (a) Search and rescue; (b) Fire fighting; (c) Medical; (d) Drugs.

Large drain on social services from military discharged in the area.

Good neighbor.

Positive effect on local economy.

Rogers drop zone - too much noise and activity.

Closure of Woodbrook is traffic problem.

Too much noise all the time.

Parkland area - crime increase because of military.

Military creates increase auto traffic.

Too many touch and go aircraft activity.

Fort Lewis - too dangerous for casual civilian use.

Cross-base travel not available to civilians - should be opened up.

Military needs to be good neighbor by taking care of week problem, i.e., Tansy Ragwort.

Morey Creek, needs to be maintained.

Auxiliary Air Force (Ft. Lewis) flight pattern other location--noise, property value.

ROTC training start fires near boundary (8th Ave. E. 271st).

Activity sets high insurance area (S. 68th and Oakes).

Ensure full consideration of designated crash danger/high noise areas in building approval process.

No residential building within designated --- zones.

County firing range 40A (Zone 92nd & 8th Ave. S.) used by State/County/Military for Qualls vs. use of military facilities.

Use of military acreage allow "garbage" and animals to be dumped.

Poss. impact increased crime rate due to base personnel.

Training groups get off military reservation and damage private property.

Joint Land Use Study
Questionnaire/Workshop Responses

QUESTION:

2. What are the benefits your community derives from the local military presence?

RESPONSES:

Diverse community, cultural mix.
Good retirement benefits, (a) Medical; (b) PX.
Provides influx of military families as permanent residents.
Maintains large wildlife refuge (76th St, Lake).
Good steward of the land.
Creates a need for commercial development and real estate turn over.
(business improvement).
Economic benefits. (Jobs, contracts, military payroll, retiree payroll, etc.).
Provides excellent public recreational activities, shows on post, air shows, berry picking, firewood, Christmas trees, hunting, dog trails, competitive horse rides, poker rides--hunting/fishing/golf/scout activities.
Special Olympics!!
Stability derived from military as our largest industry.
Military provides civilian job opportunity.
Helicopters used for rescue, etc.
Military and National Guard used during catastrophes, such as, Mt. St. Helens.
Corp of Engineers provided water diversion during Mt. St. Helens.
Madigan provides added capacity to civilian hospitals during emergency - trauma center.
Military gives this area recognition world-wide.
Preservation of open space on the reservation (green belt).
Provide opportunities for small businesses.
Military helicopters have been used for police support in Tacoma's hilltop area.
Diversity of people added by military personnel.
Cultural benefits namely the Air Force band (has been disbanded).
Participation in parades, military honors, etc., such as, honor guards.

Joint Land Use Study
Questionnaire/Workshop Responses

Instills patriotic sense in people particularly children.
Feel safer with military bases.
Educational opportunities provided to military personnel benefits the whole community as a society.
Provides skilled labor pool to industries.
Hospital facilities.
Resources for natural disasters.
Timer reserve.
Reserve duty, easy to work in community and still be in reserve.
Wildlife refuge.
Cleaned up Muck Creek, active in community.
Maintain patrol area.
Madigan (and new) extensive resource to the community.
Big resource for search and rescue operations and medical (emergency).
Adds to local economy.
Maintaining fence has reduced dumping.
Resource for items, i.e., large equipment to help with emergency community problems.
Good open wildlife refuge (one of few left).
Source of firewood.
Used for dog field trails. Woodbrook Hunt club and others.
Adds to the tax base.
Positive element to the community, good military people.
Lots of jobs.
Military reservation provide recreation areas, hunt, dog trails.
Increase ethnic awareness for community; especially in schools.
Access through bases, e.i., 8th East, 8th South, Roy Highway.
Hospital medivac and other assistance fire and police to local community.
Commercial development around bases benefits all in area.

Assist in fire fighting student training tutoring.
Reservation provides wildlife refuge.

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QUESTION:

3. How would you like things to be (in an ideal world, how would the military bases and surrounding areas relate to one another)?

RESPONSES:

Buffer zone/compatible land uses.

Communication - West/law enforcement; South/reserve training areas.

All gas taxes should be earmarked solely for transportation requirements. Now Pierce County is hopelessly grid locked and much friction to military for roads. Both military and civilian government needs money for roads!!!

Place deer crossing signs on appropriate crossings, i.e., 8th Ave. E. (Poleline Road), 8th Ave. S., Roy Highway. Call Carole Sue at 847-0846 for specific locations.

Open access route from Parkland/Spanaway (not referring to 176th cross-post highway).

Complete the cross-post highway! This is vital!

Improve military's noxious weed control program.

Civilian government/zoning regs should provide buffer zone for noise, safety - assuming we want military to remain here. (Preferably rural/agricultural buffer zones.)

More bicycle paths in/around military border areas - sidewalks? Canyon Road. Even areas outside of military affected areas for military residents.

Military air base should remain for military access only! This should be only in airport area! Area should remain undeveloped.

Military should recognize what they have in wetlands of 176th St., stop the unmonitored hunting in the fall of year, with off road vehicles butchering area, hunters shooting at anything that moves, etc.

Pierce County Humane Society and Fort Lewis/McChord Veterinarian Department must work together for mutual reporting, assistance, etc.

People caught dumping animals, garbage, waste, etc., should be heavily fined. Areas should be posted. Anonymous reports should be accepted.

Everyone should have a "neighborly" attitude towards neighbors. This means the military also.

Don't close anymore roads, nor limit post access.

Maintain wildlife as is.

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Joint Land Use Study
Questionnaire/Workshop Responses

Eight Avenue East and South widened to permit joggers and other pedestrians safe passage.

Can any part of military reservation be made more accessible for civilian recreation.

Cross-base highway to open up the area east of the base - 176th to I-5. Four lanes to include bike path.

Open up Woodbrook Drive with or without cross-base road.
Office of communication (mutual between county and military) so people only have one place to go to resolve problems. (Neutral body).

Try to use military assets to support local requirements for fire, police emergency. Need to break down barriers to cooperation.

Military training can be provided on some community projects--Seabees, Engineers, etc.

Adopt a G.I. program to get military people acquainted with people in Pierce County. Office could identify similar interests.

Number to call on base to report problem that would get a response. One-on-one, face-to-face. Not just a voice on the phone.

Have base chaplains network with local churches.

Have military parents take a more active role in local schools and local politics.

More police patrols on reservation property to prevent poaching, dirt bike riding, garbage dumping, etc.

County personnel should keep abreast of the changing density in the county resulting from military presence as well as others.

More water supplies (towers) on base for fire protection, forest fires on the reservation.

Make more accessible to recreational amenities.

Better communication-law enforcement

(a) Outlying areas

(b) Civilian horse patrol

Basically - no problem, good neighbors.

Accelerate cross-base study

County should be better neighbor.

(a) Land Use Planning

(b) Transportation planning and maintenance

Work with us on cross-base.

Joint Land Use Study
Questionnaire/Workshop Responses

Joint use of McChord Air Base

- Air cargo
- Commuter flights

Spanaway Loop Road is only N/S arterial.

- Need alternate route

Sidewalks and street lighting along all major roads (over 25 MPH) major routes around school.

Traffic control along 176th and B Street and Bethel Alternative School and B Street.

Open West side of Pacific Avenue from 176th to Roy "Y".

No open cut for utility installation (permanently damages road)

- Build tunnels instead.

Utilize existing commercial and industrial facilities rather than build new ones. Decrease vacancy rate.

Military needs group to hear and resolve complaints from neighbors.

Need cross-base road.

Need continuity between military commands (from one to the other).

More communication from the military to the neighbors for major facilities on base, i.e., new runway.

Training flights in less dense areas out of Tacoma/Pierce County area.

More joint planning military/civilian on all facets of the community (schools-solid waste, etc.)

More tolerable noise levels from McChord.

Close coordination between all government entities and community members to provide greatest benefit to community.

Increase signs defining boundaries; wildlife crossings; environment sensitive areas.

Develop quieter aircraft engines - establish quieter flight patterns.

Improved transportation around/through bases - including rail.

Complete cross-base highway.

Complete highway 7 relief route.

Capitalize on recreational use of base property.

JOINT LAND USE STUDY
QUESTIONNAIRE RESPONSE
YELM WORKSHOP

QUESTION:

1. How is your community affected by having the military as a neighbor?

RESPONSES:

Undesirable land uses might be attracted to locate next to bases.

A couple of roads across.

Bases should add voice to smaller community concerns, i.e., highway improvements - transportation plans.

Pay closer attention to condition of local roads.

Better zoning/building codes.

(a) Need to know military's plans.

(b) Compatible zoning.

Buffers.

Artillery fire frightens newcomers.

Help with search and rescue MAST - air ambulance.

Community-oriented-band, low income support.

Engineers on Deschutes River.

Nisqually River Council participation by Fort Lewis.

Base commands needs to give more recognition to personnel for community participation.

Open area not available for development.

Good account for local business.

Cross-base access is limited (Roy).

Traffic problems - congestion.

Local economic benefits (Yelm).

Responsive concerned neighbor.

No property tax.

Fireworks on 4th.

Surplus safety equipment to local communities.

Information and equipment assistance for local law enforcement.

Firing Heavy artillery 1/4 mile from boundary. Move to 2 mile or South (lives next to base)--Rattles everything including nervous system.

Wakes us up, (in mobile home with double pane windows) can see flares at night.

Hear and feel range activities most during certain weather (not awakened across road).

Seem to shoot more when it is raining.

Noise doesn't bother.

Engine run ups loudest.

Base closures can damage local economy.

Noise not a problem would feel the same even if more housing density.

Cars dumped on base--but military cleans up.

Aircraft to McChord too low at 330th.

People move there and then complain about the noise.

Apartments built on edge of noisy areas.

Noise impacts not known by renters or buyers.

Areas nearby become hot spots for development and drive agriculture out.

Shells fired right over house on Indian reservation.

Concerned about bombs blowing up roads and houses. (last summer).

Bombs land on reservation side of the river.

Phosphorus flares dangerous. Mobile home hit by flare.

Reservation across from impact area.

Feel been lucky that home hasn't been hit so far.

Artillery life threatening.

People cut fencing and enter.

Can't get through easily.

Calls to MP's don't get quick results (cutting wood - burning cars).

Joint Land Use Study
Questionnaire/Workshop Responses

Liability waiver (hold harmless) imposed yet they drive on wrong side of road.

Joint Land Use Study
Questionnaire/Workshop Responses

QUESTION:

2. What are the benefits your community derives from the local military presence?

RESPONSES:

Feels allegiance - that base serves everyone and need to put up with some things for benefit.

Have many people in local community employed at bases--supports local economy. Local purchases by base - salaries add to community.

Helps schools because federal funds for education.

Enjoy security and stability of having base as a neighbor.

Trees protected/conserved by military.

Air cleaner.

Should be able to use other ranges when weather yields more noise.

Cross-base highway would improve access to I-5 but would cut off people with horses from the reservation.

Disclose noise in deeds and rental agreements.

Bomb in less populated areas.

Open bases for deer - give permits.

Open to more recreation.

Silence artillery and airplanes.

Remain trees and open space in Roy area.

Keep east gate open.

Stability in base policy concerning base access.

Tank road provides alternate (temporary access) out of reservation.

Enjoy watching tracer rounds during evenings.

QUESTION:

3. How would you like things to be (in an ideal world, how would the military bases and surrounding areas relate to one another)?

RESPONSES:

Maintain well the roads that the public are allowed to use.

Local government shouldn't restrict houses next to base. Don't like being told what and how to manage property.

Local government should control development around bases.

Provide wide buffers.

On Mountain Highway, 176th to Roy Y, pull back boundary along and allow business.

Allow businesses to use military land along major highway.

Keep rules of conduct (driving) predictable.

Make waiver more clear.

Military be more public about when exercises and firing takes place. (Who people can contact.)

Access needs to be publicized--who to contact and what policies are. (Recreation opportunities).

Make military information more conspicuous.

Regular military column in the paper (all serving area adjacent)

Recorded telephone message.

Tell public of possibility of that auxiliary Sea-Tac could happen. Would force McChord closure.

Auxiliary Sea-Tac should not occur at McChord or Ft. Lewis.

JOINT LAND USE SURVEY
RESPONSES TO QUESTIONNAIRE
FORT LEWIS WORKSHOP

QUESTION:

1. How is your community affected by having the military as a neighbor? and/or
How is the military affected by neighboring communities?
Civilians living close are constraints to training.

RESPONSES:

Military property is often used as unofficial and illegal dumping grounds.

Because of #2 above, Fort Lewis/McChord have received illegal toxic dumping.

Civilian towns add to quality of life for military residents.

Inviting civilian activities onto post (Boy Scouts, Special Olympics, etc.) helps community relations - benefit to military as well.

Military is affected by rising crime rate of civilian community.

Gangs outside sometimes have effect on military children.

"Free Area Access" ideas (wood gathering, mushroom picking, etc.) actually do have a cost to military - when military must begin to charge, people will be upset.

New feeling from Iraq war spreads strong relationships between military and civilians - greater respect for military (gratitude).

Military population off post has monetary effect/growth effect on community and local school districts.

Some military activities (security checks, convoys, etc.) cause actual traffic problems on civilian roadways, highways.

Civilian overdevelopment causes same traffic problems to military!

From some civilian perception, the military presence is seen to cause lower wage levels.

Negative stereotyping of military people affects relationships.

"Seedy" commercial areas abound near posts - bad for both military and civilian communities.

Joint Land Use Study
Questionnaire/Workshop Responses

Size/complexity/variety of local area offers unusual and diverse employment opportunities for military family members and retirees.

Some commercial people actually tend to "prey" on military.

Military organizations often actually get involved with schools/communities in very positive way.

This community has excellent higher education opportunities which military can take advantage of.

Military brings cultural diversity, geographic diversity, wide scope to local community.

Some higher educational facilities/organizations on post (USC, Univ. of Maryland, etc.) would not be here except for military. Civilians can attend.

Increased traffic, both civilian and military

Military supports economy, Dupont in particular

Transient, low income military rentals create slums, crimes

Beneficial to area (Tacoma) economy

McChord plane noise loud in South Tacoma

Lacey gets artillery impact noise

County/cities let building occur in wrong areas - McChord approach, Fort Lewis noise areas

Perception that military damages the environment, such as the Nisqually River

Uncertainty, anxiety about future of military installations

Military land used for recreation and dumping, also civilian land.

High proportion of military in local school districts.

Always slums around installation

Locals trash training areas

Artillery firing points and impact areas close to local communities

Installation-induced traffic impacts local communities (Spanaway).

Civilian housing availability helps military in housing - inverse is true

Installation/base is block for access to I-5

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Joint Land Use Study
Questionnaire/Workshop Responses

Civilian community provides jobs for spouse

Military children have impact on schools

Meyerhauser/Dupont relationship will add commute time to Fort Lewis

Boeing new plant in Spanaway impact on commuting/housing/jobs

Fort Lewis makes compromises/accommodations on training because of proximity of local communities.

Good source of recreation facilities outside the gate

Member of community both inside and outside fence

Military presence causes and results in education, fire, security, health, and other support

External community enhanced economically by military presence

Need more fair treatment of military dependents in local schools

Community needs to be more sensitive to multi-color personnel and need to live in harmony

Community affects ability of military training - both positively and negatively: creates awareness, i.e. environmental/community concerns

Community is positively affected by military presence, brings in diversity of culture, background, experience to share, like in schools

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QUESTION:

2. What are the benefits your community derives from the local military presence?
and/or
What benefits does the military derive from neighboring communities?

RESPONSES:

Services in local community not available on post (social, shopping, recreational, sightseeing, natural resources).

Active duty, retired, employed civilians add considerable to benefit of local community.

Military posts being here provide excellent services to retired/reserve in local areas.

Military's MARS Helicopter/Rescue etc. provides special services unavailable from civilian agencies.

There does seem to be a positive relationship now between military and civilians.

Military as employer is seen as solid, stable, dependable.

Military post offers many recreational activities for its residents and others.

Military being here causes competitive dealings - thus lowers overall prices for all.

Military has been strong influence for state of Washington growth.

Civilian community's churches offer variety - spiritual food for military.

Community uses military services (MAMC, Search and Rescue, MP, Fire, Sports, security, parades/band). Band is a good ambassador

Civilians are employed by and indirectly from military presence, jobs are created for military in the community.

Washington Special Olympics at Fort Lewis

Air Show at McChord

Choices/variety - Quality of life, youth, religion, culture

Permanence of bases

Source of a greenbelt - open military training land

Environment preserved and improved by military

Business on-post

Diversity of commercial/recreation opportunities

Housing/jobs opportunities

Civilians utilize on-post activities/facilities

Military sponsors sporting activities (Special Olympics)

Social services available not provided by military

Retirees close to installation and use post facilities

Post services provide transportation assets to Fort Lewis

Communities derive taxes from military purchases, etc. - without demand to provide service in return

Large military payroll assists in local economy for services

Military is catalyst to developing community benefits and power base

Civilian community provides job opportunities for dependents - assists military

Military presence is critical to economic viability of the local communities

Military benefits from products and service in the local community

Benefit from increased population from retired military in community, members participate in community, pay taxes, assist with expertise, volunteering, etc.

Joint Land Use Study
Questionnaire/Workshop Responses

QUESTION:

3. How would you like things to be (in an ideal world, how would the military bases and surrounding areas relate to one another)?

RESPONSES:

Any decision which affects people should be treated just like this study - keep communicating.

Treat military posts as part of community.

Civilians should take time to understand training requirements, etc. of military (war and practicing for it is noisy).

Relatively speaking, this civilian community is friendlier and more accepting than others.

More civilians are taking time to understand military. This is good.

More co-op community events.

Mass transit between Thurston County and military posts.

More intelligent growth planning in local community.

Joint park area provided by military for use of all.

When military tries to help some units (ie, Boy Scouts) - loans of tents, etc. - can't do if competes with local merchandisers! - shuttle service between SeaTac and Fort Lewis, etc.

Military should understand impact of wetlands.

Expand traffic lanes at East Gate of Fort Lewis (back way out of Hadigan) - Military Road and Spanaway Loop.

Military needs to get involved with politics - school levies, etc.

Better sharing two-way of information

Fort Lewis/military officials should be more involved in community/governments

County should respect military opinions on land use

Local government should warn people of noise/hazards before houses are built

Military should buy surrounding housing for a buffer/amusement park

"Open Base" events (July 4th, carnivals, etc.) - there are probably enough per year now

Joint Land Use Study
Questionnaire/Workshop Responses

Commander should encourage membership of military in community groups, activities - Officer/NCO clubs, churches, schools, etc.

Transportation system improvements - bus service, rail, airport shuttle, ridership survey (Pierce Transit, county?), safety, convenience

More separation between installations and local population to lessen impact

Access through post to I-5 or anywhere

Military stop evicting their troublemakers from on-post housing to off-post

Clean up slums surrounding post

Allow more civilian access to post activities

Open post (now is closed)

The increase in cost of landfill has promoted the dumping on post ranges

Live and let live!!

Improve communication at executive/management levels

Achieve understanding by which the civilian community understands the mission requirements of the military facility and the military understands the rights of the public adjoining the facility

Military and civilians should live in harmony in the community

More opportunities for military/civilians to exchange ideas

Cooperation on environmental issues

A:LAND.USE

C:LC.JAM

- o Residents in the clear zone should also receive assistance for relocating into new affordable housing.
- o Concerned if there are physical deterrents to living in the clear zone?
- o Believes residents in the clear zone should be relocated to a healthier area.
- o Concerned with children crawling under fences onto military property.

JANUARY 29, 1992

- Curious as to why Chapter 5 has been included in the study.
- Concerned with helicopters flying off the bases over residential areas, especially his home.
- Concerned with the closure of State Route 507.
- Concerned with helicopters flying off the base over residential neighborhoods.
- Curious if ground vibrations caused by artillery have been increasing in the last few years.
- In comparison to other military installations the noise generated from military activities at Fort Lewis and McChord is lite.
- As a resident of American Lake Gardens, she believes she is negatively impacted by low flying planes and helicopters along with noise from artillery.
- Curious as to what citizens can do to ensure the recommendations are implemented by participating jurisdictions.
- Curious if the intent of the JLUOS is to insure civilian communities conform to installation requirements.
- Believes Chapter 5 should not be included in the Joint Land Use Study.

JANUARY 29, 1992
STEILACOOM CITY HALL

- o Interested in pursuing a Bypass road connecting Steilacoom with Steilacoom Blvd. via Farwest Drive.
- o Increased traffic traveling through Steilacoom have damaged the small-town historical atmosphere.
- o Believes the Bypass road should be addressed in the study.

- | | |
|---|--|
| o | Feels some items were omitted from the study which need to be addressed (Helicopter traffic out of Gray Field, Helicopters following set traffic patterns, maneuvers against installation boundaries, touch and go's). |
| o | Supports a Bypass road to eliminate future congestion problems. |
| o | Believes public transportation to Pierce College needs to be addressed. |
| o | Believes the needs of Northwest Landings need to be considered. |
| o | Pierce College has experienced difficulty with Farwest Drive. |
| o | As a resident of American Lake Gardens, he is concerned with the closure of Woodbrook Road. |
| o | Concerned with the future impacts on Northwest Landing. |
| o | Questioned why environmental issues were not addressed in the study. |
| o | Supports the development of a Bypass Road, believes zone classifications should be changed to support the Bypass Road. |
| o | Supports the development of a Cross-base Highway which is least offensive to American Lake Gardens. |
| o | Concerned with the current approach of aircraft landing in Grays Field (don't believe they should be over the town). |
| o | Believes the military should purchase lands in the Clear Zone. |
| o | As helicopter noise has decreased, noise from C-141's, A-6's, A-10's have become worse. |
| o | The military should investigate extending the airport to the South. |
| o | Curious as to the weight placed on larger noisier airplanes in the noise contour lines. |
| o | Concerned that planes using Gray's Field make there approach flying too low. |
| o | Concerned with traffic congestion. |
| o | Supports the development of the Bypass Road. |
| o | Concerned with the effects of disclosure statements on property values. |
| o | Concerned with affordable housing in the clear zone. |
| o | Believes the recommendations should be worded more positively to support the military activities. |
| o | Supports the recommendation to require disclosure statements. |
| o | Believes more attention should be given to preserving the natural state of the reservations and to place controls on land clearing. |
| o | The planes approaching Gray's Field result in every loud noise in the evening. |
| o | Concerned about what the trains are transporting to and from the Fort and the Port. |

- General public needs to receive more information regarding military activities and procedures.
- Believes the airstrip should be addressed in the study that is 1.5 miles south of reservation (Hatis Lake). Very low flying aircraft use the runway.
- Concerned with the protection of the environment on the military installation.
- Need to develop strict regulations to monitor noise levels.
- Believes the study should address environmental concerns.
- Explain the difference between the current activities and those of the 7th infantry.
- Believes disclosure statements should be required for the annexation of land.
- Concerned that weapons have become too large and noisy to be near Urban areas.
- Why don't they use the Yakima training area more?
- Concerned public relations office is not open to public concerns and complaints regarding military activities.
- Military should stop using pyrotechnics during dry conditions.
- Weather conditions should be taken into consideration when developing noise contour lines.

JANUARY 27, 1992
SPRINKLER RECREATIONAL CENTER

- In favor of a cross-base highway, very concerned with existing traffic problems.
- Believes a tunnel should be considered.
- Needs to address on & off base housing.
- Believes in the Cross-base highway
- Study needs to address Franklin Pierce School District
- Study needs to address local roads.
- Believes the Cross-Base Highway has merit and needs further investigation.
- Understands that the military will have security problems with a Cross-Base highway.
- Concerned with the process to obtain a permit for recreational purposes on the installations.
- Curious about the issuance of User Fees to access recreational facilities on the military installations.
- Concerned with the fencing of the installations, especially area 15, and what affect it will have on trail users, horse back riders.

- o Concerned with the lack of signs warning of animal traps. It presents a danger to domestic animals and pedestrians.
- o Would appreciate a statement from the new Colonel regarding his perceptions of how the base should be run
- o Concerned the cross-base highway will negatively impact the American Lake Gardens Residents. The residents are already having to purify there water source due to contamination.
- o Military activities are reducing property values in American Lake Gardens, turning it into a slum.
- o Interested in increasing communication between the military and neighboring communities.
- o Congestion around the base needs to be addressed by the military or the study.
- o Concerned that the closure of Woodbrook Road has resulted in limiting access to the Grade School on the military reservation.
- o Concerned that American Lake Gardens is not mentioned in the report.
- o Recommendations need stronger language.
- o Pay attention to on-base uses, eventually Pierce County will inherit the land
- o The validity of access policies need to be looked into with respects to gate and road closures.
- o Concerned with the installations polluting Puget Sound.
- o Concerned with the polluting of ground water on the military installations.
- o Concerned with destruction of wetlands on the military installations.
- o Recreational use by the Department of Defence, military personnel, and citizens of the County.
- o Concerned with traffic congestion along the Spanaway Loop Road.
- o Believes the County needs to concentrate on the maintenance of back roads which frequently have large tractors driving on them.
- o Curious if military would ever move training grounds, thus creating new impact areas.
- o Interested in the Cross-base highway connecting Spanaway with the military installations.
- o Curious if more planes could use the southern runway, which would affect the civilian population less.
- o Curious what steps are being taken to reduce single occupancy vehicles.
- o Interested in including bike paths with the cross-base highway.
- o Believes the Air Force should purchase the land in the clearzone.

WORKSHOP RESPONSES

JANUARY 21, 1992

ARLINGTON ELEMENTARY SCHOOL

- o Concerned with the development apartment buildings.
- o Stated noise over school reaches levels which result in kids covering their ears.
- o Would support updating the school for better noise attenuation, would not support relocating the school to a less noisy area.
- o Concerned with the consequences of disclosure statements on property value.
- o Disclosure statement could label the area something other than a CRASH ZONE.
- o Should industrial areas also require disclosure statements, considering if their activities resulted in an explosion, the damage could be comparable or worse than that caused by an aircraft crash.
- o Concern with traffic generated by the growth of the area. Concerned with the impact the apartment complex will have on the roads.
- o Believes that asking the business community to disclose anything is a waste of time. It should be required.
- o Concerned with the Military logging the installation. Trees provide a natural sound barrier along the freeways.
- o Opposes the proposed apartment complex.
- o Believes the current method for releasing information is not adequate.
- o Questioned why the County Zone Classifications for the APZ I and II conflict with what the military originally suggested.
- o Concerned with the cross base highway and access to American Lake Gardens.
- o Believes the APZ's should be expanded.
- o Questioned why the touch and go's can't be done at Grays Field.
- o Believes the recommendations should be adopted by the county and the cities involved in the study.
- o Prior to adoption of the recommendations, a moratorium should be placed on all development in the clear zone and APZ's.
- o Believes the City and County should adopt the recommendations of the study.
- o Wants the study incorporated into the Growth Management Act.
- o Interested in Military purchasing the clear zone and APZ's.
- o The community concern wavers and is only apparent when projects are proposed.

JANUARY 23, 1992

YELM HIGH SCHOOL

- o When plans are adopted, jurisdictions need to consider recommendations of previous studies.
- o Questioned the Environmental impacts the planes have on residential areas.
- o Does the military dump jet fuel over residential areas and what can be done about noxious fumes created by passing planes?
- o Expressed concerned with the strong aircraft fumes. Believes that the fumes are stronger at night.
- o Concerned with the amount of open space for children with high density housing.
- o Who is responsible to see that zone classifications are enforced?
- o What is the difference between previous planes flying into the Fort and the new Fleet.
- o Interested in reducing the number of flights into and out-of the base.
- o What is the effect of having the flying school adjacent to the base?
- o How will the suggestions be integrated into the study?
- o Notification of participants once the study is complete.
- o Believes noise should be measured by what keeps an individual awake.
- o Noise Complaint Office is not helpful and isolates the caller.
- o Wants military to use simulators instead of the firing range.
- o Purchased their home knowing the noise was here. If you live in the area, you should expect a little noise.
- o What is the difference between ground generated noise and air generated noise?
- o Reason for the boundaries of the study, extend boundary further than half a mile.
- o The air noise extends a greater distance from the base.
- o How does weather conditions affect the transfer of noise?
- o The Doppler effect, the helicopter noise reaches her before the helicopters do and then drops off immediately after they pass overhead.
- o What is the funding for the Cross base highway?
- o What does the JLUS recommendation mean which states the military should be involved in local planning?

APPENDIX E

REFERRAL ISSUES

APPENDIX E

REFERRAL ISSUES

INTRODUCTION

The comments and responses provided at the public workshops contributed valuable direction for the study. However, some of the issues raised were not in the study's scope of work and could not be undertaken within the Joint Land Use Study program. The study recognizes the importance of acknowledging these issues. To accomplish this, the general comments have been separated into five categories: economic impacts, housing, recreation, social benefits and detriments, and community service. The study team suggests that the agencies and organizations identified under each issue, address the referral issues. *These problems are perceived by the public and have not been verified.*

I. ECONOMIC IMPACTS:

Property values around the base are artificially high due to the increased demand for residential and commercial space adjacent to the base.

Increased demands for public services/utilities are greater than tax revenue generated by the bases.

The large portions of government land which are tax-free result in an artificially low tax base.

The retired military community as well as military spouses and children saturate the work force and lower wages for unskilled jobs.

Businesses along the bases perimeter are unable to match selling prices of the Commissary and the Base Exchange. This prevents them from competing effectively for military personnel's patronage.

The large number of retired military personnel locating near the bases flood the job market and lower entry level position wage rates.

Agencies to which Economic Impacts are Referred:

Economic Development Board of Pierce County

Economic Development Board of Thurston County

Pierce County Department of Community and Economic Development

Pierce County Planning and Land Services, Comprehensive Plan Team

City of Tacoma, Planning and Development Services Department, Economic Development Division

Camp Murray

Fort Lewis (Office of PALO)

McChord Air Force Base (Office of Public Information)

State of Washington Department of Labor and Industries

II. HOUSING CONCERNS:

The high concentration of people surrounding the military installations have resulted in an increase in poorly developed apartment complexes with little or no recreational facilities for children (parks).

A large percentage of the rental housing surrounding the installations are unkept and are negatively affecting neighboring homes property values.

The military's presence in the community has resulted in a large transient population diminishing the sense of "community."

Large portions of the neighborhoods that lie within the 65 Ldn noise contour have homes which were not built with noise attenuation features.

The large number of military personnel who live around the installations consume the majority of the affordable housing stock. Long term residents have difficulty locating affordable housing.

The younger population employed by the military installations brings with them increases in illegal activities.

The high demand for housing and business space surrounding the installations has increased property values.

Agencies to which Housing Issues are Referred:

Pierce County Department of Community and Economic Development
Pierce County Department of Planning and Land Services
Fort Lewis (Office of DEH)
Tacoma Housing Authority
City of Tacoma, Planning and Development Services Department, Community and Human Services Division
McChord AFB (Office of Civil Engineer)
Building Industry Association of Tacoma
Building Industry Association of Pierce County
Pierce County Department of Parks, recreation and community services
Pierce County Department of Parks, Recreation and Community Services
State of Washington Parks and Recreation Commission
State of Washington Department of Community Development

III. RECREATIONAL USE OF MILITARY INSTALLATIONS:

The current permit process is confusing and not widely known. Moreover, the military is unpredictable regarding who is granted access and who is not.
The military is limiting access to people who have the proper permits and wish to use the base for recreational activities by fencing of the base.
The benefit to locating near military reservations is to have access to the large green belts for hunting, hiking, horseback riding, and bicycling.
Hunting, fishing and trapping are still necessary to control wildlife population on the military reservations.

Hunting and trapping within the military reservations present a severe danger for hikers, horseback riders and homes owners located along the perimeter of the bases.

Agencies to which Recreational Issues are referred:

Fort Lewis (Office of DPCA)
McChord Air Force Base
Camp Murray
State of Washington Parks and Recreation Commission
Pierce County Department of Parks, Recreation, and Community Services
Metropolitan Park District of Tacoma

IV. SOCIAL CONCERNS:

Existing social problems, such as pronounced crime and prostitution, and higher community-wide drug use, are exacerbated by local military presence.

Local communities are enhanced by the diverse ethnic and cultural perspective imported to the area by the military population.

The military population causes an increased burden on civilian social services.

Automobile insurance rates are higher due to large numbers of military drivers.

Some military people do not keep up their surroundings, are noisy, and do not contribute to the community.

Agencies to which Social CONCERNS Issues are Referred:

Fort Lewis (Office of PALO)
McChord Air Force Base
Pierce County Sheriff's Department
Thurston County Sheriff's Department

Pierce County Planning and Land Services Code Enforcement

Pierce County Department of Human Services

City of Tacoma, Planning and Development Services Department, Community and Human Services Division

V. COMMUNITY SERVICE:

Promote community participation in base events and vice versa.

Use bases to distribute food to world's hungry.

Military should beautify area by picking up litter in base border areas.

Base commands should recognize their personnel for community participation.

Agencies to which Community Service Issues are Referred:

Fort Lewis (Office of PALO)

Camp Murray

McChord Air Force Base

Local School Districts

Pierce County Department of Human Services

City of Tacoma, General Services Department, Community Relations Division

VI. ENVIRONMENTAL CONCERNS:

The large pieces of undeveloped land and greenbelts located on the military installations need to be preserved.

Storage of toxic wastes on the installations present a danger to neighboring residents and business.

Military activity has negative side effects on the neighboring community in the form of air and noise pollution.

The wetlands and sensitive environments located on the military installations need to be identified and protected.

The military bases practice inhuman activities with respects to water fowl (ducks) who access the wetlands on the installations.

The installations frequently experience problems with rubbish being dumped along roadsides of the bases.

The Murray and Muck Creek located on the military installations need to be preserved.

The noxious weed control programs negatively affect the residences and businesses located adjacent to the installation.

Agencies to which Environment concerns are referred to:

Fort Lewis (Office of DEH)

McChord Air Force Base (Office of Civil Engineer)

Camp Murray

State of Washington Department of Fisheries

State of Washington Department of Ecology

City of Tacoma, Planning and Development Services Department, Growth Management Division

APPENDIX F

AICUZ ACOUSTICAL CONSTRUCTION TECHNOLOGY AND TARGET STC RATINGS

APPENDIX F
NOISE LEVEL REDUCTION

BACKGROUND: Environmental noise affects substantial amounts of land area within the United States. Through many years of research by a number of agencies and groups, it has been determined that exterior noise may be isolated and reduced in living and working environments through design and construction techniques, noise insulation or attenuation, which selectively decrease the sound entering occupied structures from the outside. The noise reduction required is based upon calculations of noise exposure, with the index of noise exposure including the noise level, its duration, frequency of occurrence, and time of day of the occurrence (see Appendix D - Description of the Noise Environment). The graduated noise level reduction standards (NLR) are based upon the reduction in decibels (A-weighted) of a standard noise source from the exterior to the interior of a structure.

PURPOSE: This appendix provides recommended standards for design and construction techniques for primarily residential construction which will achieve the NLR corresponding to the land use compatibility guidelines identified in Section IV. These standards are intended to serve as a framework to develop (amend or supplement) a building code for exterior noise isolation with respect to aircraft noise. They are not intended to repeal, abrogate, annul, or in any way impair or interfere with existing provisions of other laws or ordinances, or with private restrictions placed upon property by covenant, deed, easement, or other private agreement. In those instances where these standards would impose a greater restriction upon the land, buildings, or structures, it is recommended that they govern. Other methods exist to achieve the NLRs.

DEFINITIONS: Words or phrases not defined in this appendix shall derive their meaning from nationally approved agencies, publications, common usage, or court cases.

A-Weighted Sound Levels: See Sound Level.

Adjusted Noise Level Reduction (ANLR): (See Noise Level Reduction.) Noise level reduction outside-to-inside a designated room that has been adjusted as if the room, when furnished, contained an amount of sound absorption equal to the floor area of the room.¹ The adjustment is accomplished by adding to a measured sound level reduction 10 times the common logarithm of the ratio of the floor area of the room to the measured sound absorption of the room. No adjustment is added if the sound level reduction measurement is made in a room that is furnished for its intended usage.

ANSI Specifications: Specifications by the American National Standards Institute adopted by reference herein. Such references to decibels, frequency bands, and others referred to in such specifications are inclusive as definitions within the meaning of this appendix.

ASTM Specifications: Specifications by the American Society for Testing Materials adopted by reference herein. Such references to decibels, frequency bands, and others as referred to in such specifications are inclusive as definitions within the meaning of this appendix.

DECIBEL (db): The physical unit commonly used to describe noise levels; the unit of level such as the sound pressure level. One decibel is the level of the squared sound pressure that is $10^{-1/10} = 1.259$ times the squared reference sound pressure; also, one decibel is the level of the sound pressure that is $10^{-1/20} = 1.122$ times the reference pressure.

¹ In many living rooms, the sound absorption therein is equal to the floor area, or 10 to 20 percent more, so the adjusted noise level reduction measured in an unfurnished room is expected to be nearly equal to the sound level reduction that will exist when the room is normally furnished.

Enforcing Officer: The person designated by properly constituted authority to enforce the regulation.

Frequency: Number of complete oscillation cycles per unit of time. The unit of frequency often used is the Hertz (Hz).

Frequency Band: Difference in Hertz between the upper and lower frequencies that delimit a band, or the interval in octaves between the two frequencies. The band is located frequency-wise by the geometric mean frequency between the two band-edge frequencies. Examples are "an octave band centered at 500Hz" or, more simply, "the 500Hz octave band."

Hertz: Unit of frequency equal to one cycle per second.

Noise Level: Same as sound level, for airborne sound, unless specified otherwise.

Noise Level Reduction (NLR): Difference in decibels, between the noise level outside a building and the noise level inside a designated room in the building that was caused by exterior noise.

Noise Reduction (NR): Reduction in decibels, of the sound pressure levels between two designated locations or rooms, for a stated frequency or frequency band.

Occupied Rooms: Rooms within enclosed structures which are, or may reasonably be expected to be used for human activities which involve speech communication, sleeping, eating, listening to live, recorded, or broadcast music or speech, or regular usage of telephones.

Person: Individual, firm, partnership, corporation, company, association, joint stock association, or body politic, includes the trustee, receiver, assignee, administrator, executor, guardian, or other representatives.

Qualified Acoustical Consultant: A person who, by reason of his training and experience in the science and technology of acoustics and his knowledge of construction methods and materials, is considered qualified to pass judgment on acoustical design, materials, and methods of construction for the attenuation of noise, and who is acceptable to the enforcing officer.

Reverberation Time: Time that would be required for sound pressure level in a room to decay 60 decibels, after a sound source in the room is stopped.

Sound Absorption: Capacity of materials and furnishings in a room to absorb sound. For the purposes of this appendix, the sound absorption is equal to 0.05 times the room volume in cubic feet divided by the measured reverberation time in seconds determined with an octave band of noise centered at 500 Hertz.¹

Sound Level: In decibels, the quantity measured by an instrument satisfying requirements of American National Standard Specification for Sound Level Meters S1.4.-1971, or the latest revision thereof. Unless explicitly described otherwise, the sound level shall be the frequency-weighted sound pressure level obtained with the frequency weighting A and the standardized dynamic characteristic SLOW.²

Sound Pressure Level: In decibels, 20 times the logarithm to base 10 of the ratio of a sound pressure to the reference sound pressure. The reference pressure for airborne sound is 20 micronewtons per square meter (0.0002 microbar).

¹ In many normally furnished rooms, the sound absorption is roughly equal, numerically, to the floor area of the room. Sound absorption measured in a room, either empty or furnished, can be obtained from measurements of the reverberation time and the volume of the room.

² In this appendix, the sound level is to be understood to be the A-weighted sound level (meter response-slow). With the A-weighting, the sound-level meter is relatively less sensitive to low-frequency sound, somewhat in the way the ear is progressively less sensitive to sounds of frequency below 1000 Hertz (cycles per second).

Sound Transmission Class (STC): A single-figure rating of the sound-insulating properties of a partition as determined by methods described in "Determination of Sound Transmission Class," American Society of Testing and Materials Designation E413-73.

Sound Transmission Loss: The noise reduction between two rooms, in a specified frequency band, plus 10 times the common logarithm of the ratio of the area of the partition to the total sound absorption in the receiving room, as determined by methods described in "Measurement of Airborne Sound Insulation in Building," American Society of Testing and Materials Designation E90-70 or latest revision thereof.¹

Delineation of Districts: It is recommended that the Compatible Use Districts defined and delineated in Chapter IV be utilized for determining the required NLR.

Adopted Specifications: It is recommended that the following specifications be adopted and made a part of any ordinance: sound level measuring instrument - ANSI S1.4-1971; sound transmission class - ASTM E413-70T or ASTM E413-73; sound transmission loss - ASTM E90-66T or ASTM E90-70; air filtration test - ASTM E283-65T or latest revision thereof.

NLR Design Requirements: General Requirements:

a. The recommended NLR requirements for Chapter IV, Compatible Use Districts (CUD), may be achieved by any suitable combination of building design, choice of building materials, and execution of construction details in accordance with established architectural and acoustical principles. The NLR requirements should apply to all occupied rooms having one or more exterior walls or ceilings, when furnished in accordance with the intended final usage of the rooms.

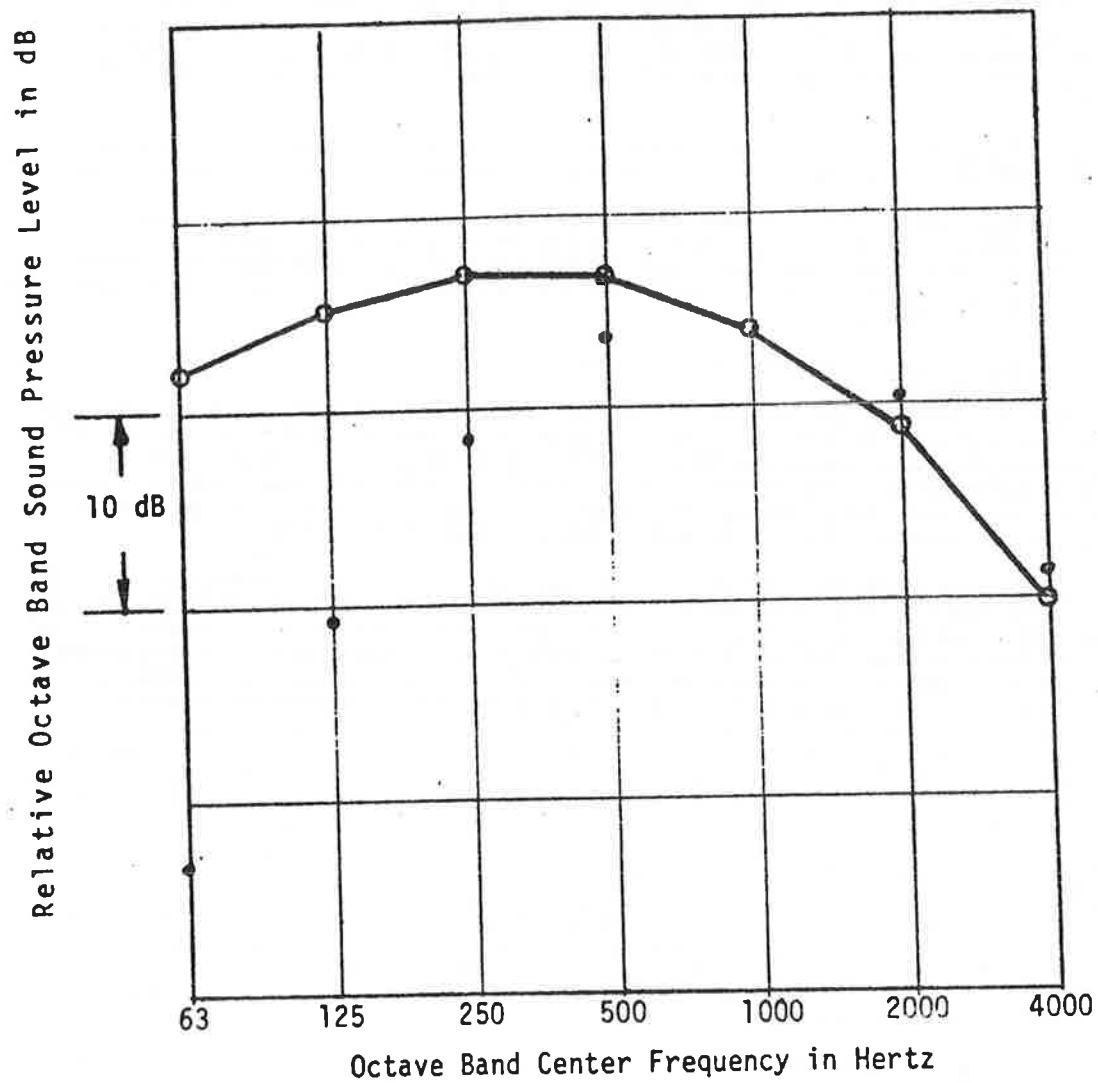
b. Compliance with the recommended design and construction standards of this appendix satisfies the NLR requirements recommended in the CUDs of Chapter IV. The standards should be applied to plans and specifications for any proposed structure or use for which an NLR 25, NLR 30, or NLR 35 is recommended. If the plans or specifications do not indicate compliance with the recommended standards of this appendix, a written statement from a qualified acoustical consultant should accompany the plans and specifications certifying that the construction of the building will result in an NLR for appropriate occupied rooms at least as great as the NLR value specified for the applicable CUD. Additions, alterations, repairs, and changes of use or occupancy in existing buildings should comply with the provisions of this appendix except as recommended in the Uniform Building Code.

NLR Design Information: For calculations undertaken for purposes of meeting the recommendations of this appendix, a qualified acoustical consultant may use the assumed outside noise spectrum shown in Figure F-1. Such calculations should take into account the area of exposed room surfaces, the sound transmission loss characteristics of exposed room surfaces, and the amount of sound absorption in the room. For rooms in residential structures, the ratio of the sound absorption in each room to the room floor area may be assumed to be:

<u>OCTAVE CENTER FREQUENCY BAND, H_z</u>	<u>SOUND ABSORPTION FLOOR AREA</u>
63	0.30
125	0.50
250	0.75
500 and higher	1.0

Allowances should be made for a decrement of at least two decibels for sound leaks and flanking sound transmission paths.

¹ A measure of the sound insulating properties of a wall/floor/ceiling/window/door, that are characteristics of the partition itself and not the room of which it is a part.



Note: Closed Circles show the corresponding relative A-weighted octave band sound pressure levels.

FIGURE F-1 OCTAVE BAND NOISE SPECTRUM TO BE USED FOR CALCULATION OF NOISE LEVEL REDUCTION

RECOMMENDED BUILDING REQUIREMENTS

A. SECTION 1 - RECOMMENDED BUILDING REQUIREMENTS FOR A MINIMUM NOISE LEVEL REDUCTION OF 25 db

1-1. Compliance: Compliance with the following standards shall be deemed to meet the requirements of the compatible use districts in which an NLR 25 is specified.

1-2. General:

a. Brick veneer, masonry blocks, or stucco exterior walls shall be constructed airtight. All joints shall be grouted or caulked airtight.

b. At the penetration of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar.

c. Window and/or through-the-wall ventilation units shall not be used.

d. Through-the-wall/door mailboxes shall not be used.

1-3. Exterior Walls:

a. Exterior walls, other than as described in this section, shall have a laboratory sound transmission class rating of at least STC-34.

b. Masonry walls having a surface weight of at least 25 pounds per square foot do not require a furred (stud) interior wall. At least one surface of concrete block walls shall be plastered or painted with heavy "bridging" paint.

c. Stud walls shall be at least 4" in nominal depth and shall be finished on the outside with siding-on-sheathing, stucco, or brick veneer.

(1) Interior surface of the exterior walls shall be of gypsum board or plaster at least 1/2" thick, installed on the studs.

(2) Continuous composition board, plywood, or gypsum board sheathing at least 1/2" thick shall cover the exterior side of the wall studs behind wood or metal siding. Asphaltic or wood shake shingles are acceptable in lieu of siding.

(3) Sheathing panels shall be butted tightly and covered on the exterior with overlapping building paper. The top and bottom edges of the sheathing shall be sealed.

(4) Insulation material at least 2" thick shall be installed continuously throughout the cavity space behind the exterior sheathing and between wall studs. Insulation shall be glass fiber or mineral wool.

1-4. Windows:

a. Windows other than as described in this section shall have a laboratory sound transmission class rating of at least STC-28.

b. Glass shall be at least 3/16" thick.

c. All operable windows shall be weather-stripped and airtight when closed so as to conform to an air infiltration test not to exceed 0.5 cubic foot per minute per foot of crack length in accordance with ASTM E-283-65-T.

d. Glass of fixed-sash windows shall be sealed in an airtight manner with a nonhardening sealant or a soft elastomer gasket or gasket tape.

e. The perimeter of window frames shall be sealed airtight to the exterior wall construction with a sealant conforming to one of the following Federal specifications: TT-S-00227, TT-S-00230, or TT-S-00153.

f. The total area of glass in both windows and doors in sleeping spaces shall not exceed 20% of the floor area.

1-5. Doors:

- a. Doors, other than as described in this section, shall have a laboratory sound transmission class rating of at least STC-28.
- b. All exterior side-hinged doors shall be solid-core wood or insulated hollow metal at least 1-3/4" thick and shall be fully weather-stripped.
- c. Exterior sliding doors shall be weather-stripped with an efficient airtight gasket system with performance as specified in Section 1-4c. The glass in the sliding doors shall be at least 3/16" thick.
- d. Glass in doors shall be sealed in an airtight nonhardening sealant or in a soft elastomer gasket or glazing tape.
- e. The perimeter of door frames shall be sealed airtight to the exterior wall construction as described in Section 1-4e.

1-6. Roofs:

- a. Combined roof and ceiling construction other than described in this section and Section 1-7 shall have a laboratory sound transmission class rating of at least STC-39.
- b. With an attic or rafter space at least 6" deep, and with a ceiling below, the roof shall consist of closely butted 1/2" composition board, plywood, or gypsum board sheathing topped by roofing as required.
- c. If the underside of the roof is exposed, or if the attic or rafter space is at least 6" deep, the roof construction shall have a surface weight of at least 25 pounds per square foot. Rafters, joints, or other framing may not be included in the surface weight calculation.
- d. Window or dome skylights shall have a laboratory sound transmission class rating of at least STC-28.

1-7. Ceilings:

- a. Gypsum board or plaster ceilings at least 1/2" thick shall be provided where required by paragraph 1-6b, above. Ceilings shall be substantially airtight with a minimum number of penetrations.
- b. Glass fiber or mineral wool insulation at least 2" thick shall be provided above the ceiling between joists.

1-8. Floors: Openings to any crawl spaces below the floor of the lowest occupied rooms shall not exceed 2% of the floor area of the occupied rooms.

1-9. Ventilation:

- a. A mechanical ventilation system shall be installed that will provide the minimum air circulation and fresh air supply requirements for various uses in occupied rooms without the need to open any windows, doors, or other openings to the exterior.
- b. Gravity vent openings in attic shall not exceed code minimum in number and size.
- c. If a fan is used for forced ventilation, the attic inlet and discharge openings shall be fitted with sheet metal transfer ducts of at least 20 gauge steel, which shall be lined with 1"-thick coated glass fiber, and shall be at least 5 feet long with one 90° bend.
- d. All vent ducts connecting the interior space to the outdoors, excepting domestic range exhaust ducts, shall contain at least a 5-foot length of internal sound-absorbing duct lining. Each duct shall be provided with a bend in the duct such that there is no direct line of sight through the duct from the venting cross section to the room-opening cross section.

e. Duct lining shall be coated glass fiber duct liner at least 1" thick.

f. Domestic range exhaust ducts connecting the interior space to the outdoors shall contain a baffle plate across the exterior termination which allows proper ventilation. The dimensions of the baffle plate should extend at least one diameter beyond the line of sight into the vent duct. The baffle plate shall be of the same material and thickness as the vent duct material.

g. Fireplaces shall be provided with well-fitted dampers.

B. SECTION 2 - RECOMMENDED BUILDING REQUIREMENTS FOR A MINIMUM NOISE LEVEL REDUCTION OF 30 db

2-1. Compliance: Compliance with the following standards shall be deemed to meet the requirements of the Compatible Use Districts in which an NLR 30 is specified.

2-2. General:

a. Brick veneer, masonry blocks, or stucco exterior walls shall be constructed airtight. All joints shall be grouted or caulked airtight.

b. At the penetration of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar.

c. Window and/or through-the-wall ventilation units shall not be used.

d. Operational-vented fireplaces shall not be used.

e. All sleeping spaces shall be provided with either a sound-absorbing ceiling or a carpeted floor.

f. Through-the-wall/door mailboxes shall not be used.

2-3. Exterior Walls:

a. Exterior walls, other than as described below, shall have a laboratory sound transmission class rating of at least STC-44.

b. Masonry walls having a surface weight of at least 40 pounds per square foot do not require a furred (stud) interior wall. At least one surface of concrete block walls shall be plastered or painted with heavy "bridging" paint.

c. Stud walls shall be at least 4" in nominal depth and shall be finished on the outside with siding-on-sheathing, stucco, or brick veneer.

(1) Interior surface of the exterior walls shall be of gypsum board or plaster at least 1/2" thick, installed on the studs. The gypsum board or plaster may be fastened rigidly to the studs if the exterior is brick veneer or stucco. If the exterior is siding-on-sheathing, the interior gypsum board or plaster must be fastened resiliently to the studs.

(2) Continuous composition board, plywood, or gypsum board sheathing shall cover the exterior side of the wall studs behind wood or metal siding. The sheathing and facing shall weigh at least 4 pounds per square foot.

(3) Sheathing panels shall be butted tightly and covered on the exterior with overlapping building paper. The top and bottom edges of the sheathing shall be sealed.

(4) Insulation material at least 2" thick shall be installed continuously throughout the cavity space behind the exterior sheathing and between wall studs. Insulation shall be glass fiber or mineral wool.

2-4. Windows:

a. Windows, other than described in this section, shall have a laboratory sound transmission class rating of at least STC-33.

b. Glass of double-glazed windows shall be at least 1/8" thick. Panes of glass shall be separated by a minimum 3" airspace.

c. Double-glazed windows shall employ fixed sash or efficiently weather-stripped, operable sash. The sash shall be rigid and weather-stripped with material that is compressed airtight when the window is closed so as to conform to an infiltration test not to exceed 0.5 cubic foot per minute per foot of crack length in accordance with ASTM E-283-65-T.

d. Glass of fixed-sash windows shall be sealed in an airtight manner with a nonhardening sealant or a soft elastomer gasket or glazing tape.

e. The perimeter of window frames shall be sealed airtight to the exterior wall construction with a sealant conforming to one of the following Federal specifications: TT-S-00227, TT-S-00230, or TT-S-00153.

f. The total area of glass of both windows and exterior doors in sleeping spaces shall not exceed 20% of the floor area.

2-5. Doors:

a. Doors, other than as described in this section, shall have a laboratory sound transmission class rating of at least STC-33.

b. Double-door construction is required for all door openings to the exterior. Openings fitted with side-hinged doors shall have one solid-core wood or insulated hollow metal core door at least 1-3/4" thick separated by an airspace of at least 4" from another door, which can be a storm door. Both doors shall be tightly fitted and weather-stripped.

c. The glass of double-glazed sliding doors shall be separated by a minimum 4" airspace. Each sliding frame shall be provided with an efficiently airtight weather-stripping material as specified in Section 2-4c.

d. Glass of all doors shall be at least 3/16" thick. Glass of double sliding doors shall not be equal in thickness.

e. The perimeter of door frames shall be sealed airtight to the exterior wall construction as indicated in Section 8-4e.

f. Glass of doors shall be set and sealed in an airtight nonhardening sealant or a soft elastomer gasket or glazing tape.

2-6. Roofs:

a. Combined roof and ceiling construction other than described in this section and Section 2-7 shall have a laboratory sound transmission class rating of at least STC-44.

b. With an attic or rafter space at least 6" deep, and with a ceiling below, the roof shall consist of closely butted 1/2" composition board, plywood, or gypsum board sheathing topped by roofing as required.

c. If the underside of the roof is exposed, or if the attic or rafter space is less than 6" deep, the roof construction shall have a surface weight of at least 40 pounds per square foot. Rafters, joists, or other framing may not be included in the surface weight calculation.

d. Window or dome skylights shall have a laboratory sound transmission class rating of at least STC-33.

2-7. Ceilings:

a. Gypsum board or plaster ceilings at least 1/2" thick shall be provided where required by paragraph 2-6b, above. Ceilings shall be substantially airtight, with a minimum number of penetrations.

b. Glass fiber or mineral wool insulation at least 2" thick shall be provided above the ceiling between joists.

2-8. Floors: The floor of the lowest occupied rooms shall be slab on fill, below grade, or over a fully enclosed basement. All door and window openings in the fully enclosed basement shall be tightly fitted.

2-9. Ventilation:

a. A mechanical ventilation system shall be installed that will provide the minimum air circulation and fresh air supply requirements for various uses in occupied rooms without the need to open any windows, doors, or other openings to the exterior.

b. Gravity vent openings in attic shall not exceed code minimum in number and size. The openings shall be fitted with transfer ducts at least 3 feet in length containing internal sound-absorbing duct lining. Each duct shall have a lined 90° bend in the duct such that there is no direct line of sight from the exterior through the duct into the attic.

c. If a fan is used for forced ventilation, the attic inlet and discharge openings shall be fitted with sheet metal transfer ducts of at least 20 gauge steel, which shall be lined with 1"-thick coated glass fiber, and shall be at least 5 feet long with one 90° bend.

d. All vent ducts connecting the interior space to the outdoors, excepting domestic range exhaust ducts, shall contain at least a 10-foot length of internal sound-absorbing duct lining. Each duct shall be provided with a lined 90° bend in the duct such that there is no direct line of sight through the duct from the venting cross section to the room opening cross section.

e. Duct lining shall be coated glass fiber duct liner at least 1" thick.

f. Domestic range exhaust ducts connecting the interior space to the outdoors shall contain a baffle plate across the exterior termination which allows proper ventilation. The dimensions of the baffle plate should extend at least one diameter beyond the line of sight into the vent duct. The baffle plate shall be of the same material and thickness as the vent duct material.

g. Building heating units with flues or combustion air vents shall be located in a closet or room closed off from the occupied space by doors.

h. Doors between occupied space and mechanical equipment areas shall be solid-core wood or 20 gauge steel hollow metal at least 1-3/4" thick and shall be fully weather-stripped.

C. SECTION 3 - RECOMMENDED BUILDING REQUIREMENTS FOR A MINIMUM NOISE LEVEL REDUCTION OF 35 db

3-1. Compliance: Compliance with the following standards shall be deemed to meet the requirements of the Compatible Use Districts in which an NLR 35 is specified.

3-2. General:

a. Brick veneer, masonry blocks, or stucco exterior walls shall be constructed airtight. All joints shall be grouted or caulked airtight.

b. At the penetration of exterior walls by pipes, ducts, or conduits, the space between the wall and pipes, ducts, or conduits shall be caulked or filled with mortar.

c. Window and/or through-the-wall ventilation units shall not be used.

d. Operational-vented fireplaces shall not be used.

e. All sleeping spaces shall be provided with either a sound-absorbing ceiling or a carpeted floor.

f. Through-the-wall/door mailboxes shall not be used.

g. No glass or plastic skylight shall be used.

3-3. Exterior Walls:

a. Exterior walls, other than as described below, shall have a laboratory sound transmission class rating of at least STC-49.

b. Masonry walls having a surface weight of at least 75 pounds per square foot do not require a furred (stud) interior wall. At least one surface of concrete block walls shall be plastered or painted with heavy "bridging" paint.

c. Stud walls shall be at least 4" in nominal depth and shall be finished on the outside with siding-on-sheathing, stucco, or brick veneer.

(1) Interior surface of the exterior walls shall be of gypsum board or plaster at least 1/2" thick, installed on studs. The gypsum board or plaster may be fastened rigidly to the studs if the exterior is brick veneer. If the exterior is stucco or siding-on-sheathing, the interior gypsum board or plaster must be fastened resiliently to the studs.

(2) Continuous composition board, plywood, or gypsum board sheathing shall cover the exterior side of the wall studs behind wood or metal siding. The sheathing and facing shall weigh at least 4 pounds per square foot.

(3) Sheathing panels shall be butted tightly and covered on the exterior with overlapping building paper. The top and bottom edges of the sheathing shall be sealed.

(4) Insulation material at least 3-1/2" thick shall be installed continuously through the cavity space behind the exterior sheathing and between wall studs. Insulation shall be glass fiber or mineral wool.

3-4. Windows:

a. Windows, other than described in this section, shall have a laboratory sound transmission class rating of at least STC-38.

b. Double-glazed windows shall employ fixed sash. Glass of double-glazed windows shall be at least 1/8" thick. Panes of glass shall be separated by a minimum 3" airspace and shall not be equal in thickness.

c. Glass of windows shall be sealed in an airtight manner with a nonhardening sealant or a soft elastomer gasket or glazing tape.

d. The perimeter of window frames shall be sealed airtight to the exterior wall construction with a sealant conforming to one of the following Federal specifications: TT-S-00227, TT-S-00230, or TT-S-00153.

e. The total area of glass of both windows and exterior doors in sleeping spaces shall not exceed 20% of the floor area.

3-5. Doors:

a. Doors, other than as described in this section, shall have a laboratory sound transmission class rating of at least STC-38.

b. Double-door construction is required for all door openings to the exterior. The door shall be side-hinged and shall be solid-core wood or insulated hollow metal, at least 1-3/4" thick, separated by a vestibule at least 3 feet in length. Both doors shall be tightly fitted and weather-stripped.

c. The perimeter of door frames shall be sealed airtight to the exterior wall construction as specified in Section III-4d.

3-6. Roofs

a. Combined roof and ceiling construction other than described in this section and Section 3-7 shall have a laboratory sound transmission class rating of at least STC-49.

b. With an attic or rafter space at least 6" deep, and with a ceiling below, the roof shall consist of closely butted 1/2" composition board, plywood, or gypsum board sheathing topped by roofing as required.

c. If the underside of the roof is exposed, or if the attic or rafter space is less than 6" deep, the roof construction shall have a surface weight of at least 75 pounds per square foot. Rafters, joists, or other framing may not be included in the surface weight calculation.

3-7. Ceilings:

a. Gypsum board or plaster ceilings at least 1/2" thick shall be provided where required by paragraph 3-6. Ceilings shall be substantially airtight, with a minimum number of penetrations. The ceiling panels shall be mounted on resilient clips or channels. A nonhardening sealant shall be used to seal gaps between the ceiling and walls around the ceiling perimeter.

b. Glass fiber or mineral wool insulation at least 3-1/2" thick shall be provided above the ceiling between joists.

3-8. Floors: The floors of the lowest occupied rooms shall be slab on fill or below grade.

3-9. Ventilation:

a. A mechanical ventilation system shall be installed that will provide the minimum air circulation and fresh air supply requirements for various uses in occupied rooms without need to open any windows, doors, or other openings to the exterior.

b. Gravity vent openings in attic shall not exceed code minimum in number and size. The openings shall be fitted with transfer ducts at least 6 feet in length containing internal sound-absorbing duct lining. Each duct shall have a lined 90° bend in the duct such that there is no direct line of sight from the exterior through the duct into the attic.

c. If a fan is used for forced ventilation, the attic inlet and discharge openings shall be fitted with sheet metal transfer ducts of at least 20 gauge steel, which shall be lined with 1"-thick coated glass fiber, and shall be at least 10 feet long with one 90° bend.

d. All vent ducts connecting the interior space to the outdoors, excepting domestic range exhaust ducts, shall contain at least a 10-foot length of internal sound-absorbing duct lining. Each duct shall be provided with a lined 90° bend in the duct such that there is no direct line of sight through the duct from the venting cross section to the room-opening cross section.

e. Duct lining shall be coated glass fiber duct liner at least 1" thick.

f. Domestic range exhaust ducts connecting the interior space to the outdoors shall contain a baffle plate across the exterior termination which allows proper ventilation. The dimensions of the baffle plate should extend at least one diameter beyond the line of sight into the vent duct. The baffle plate shall be of the same material and thickness as the vent duct material.

g. Building heating units with flues or combustion air vents shall be located in a closet or room closed off from the occupied space by doors.

h. Doors between occupied space and mechanical equipment areas shall be solid-core wood or 20 gauge steel hollow metal at least 1-3/4" thick and shall be fully weather-stripped.

RECOMMENDED ADMINISTRATION AND ENFORCEMENT

General: It is recommended that an enforcing officer administer and enforce these recommendations if adopted as an ordinance. Application for permits and variances should be made to the enforcing officer.

Verification of Building Noise Level Reduction:

It is recommended that the enforcing officer, prior to granting final approval of the finished building construction, require at the expense of the owner, field tests by a qualified acoustical consultant to verify the noise level reduction (NLR) of the building whenever it appears that variations from sound-isolation features in the approved plan, poor sealing methods, or defective workmanship may have been employed. The report of verification should be filed with the enforcing officer and include a description of the verification method, measurement instrumentation, and the results of the noise level reduction measurements.

The noise level reduction requirements of Chapter IV should be satisfied for each occupied room. For the purposes of verification, it would suffice to test only in those occupied rooms in which exterior noise is most likely to penetrate.

Verification Test Procedure:

For the purpose of verifying compliance with the noise level reduction requirements in a completed building, aircraft noise prevailing outside the building may be used as the sound source.

Using the noise signal generated by an individual aircraft operation (flyover event), outside and inside noise levels should be measured simultaneously. The difference between the maximum noise levels measured outside and inside the room for the flyover event should be taken as the measured NLR for the flyover event, provided that the maximum inside noise level exceeds by at least seven decibels the background noise level in the absence of the flyover.

The NLR shall be determined for at least four flyover events for each room tested. The resulting NLR value assigned to the room should be the arithmetic average of the individual flyover event NLR values.

For occupied rooms in residential structures, the inside noise level should be measured with a single microphone four feet above the floor near the center of the room. For other than residential structures, the inside noise level should be measured with a single microphone five feet above the floor, either near the center of the room, or eight feet into the room from the center of the exterior wall most directly exposed to the aircraft noise, whichever distance from the most directly exposed wall is smaller.

The outside noise level should be measured at an unobstructed location approximately five feet above the level of the floor of the room under the test and eight feet outside the exterior wall most directly exposed to the aircraft noise source, near the center of the wall.

For structures in which several rooms are to be evaluated, the tests need be conducted only for those rooms whose exterior walls are most directly exposed to the noise source. If noise level reduction requirements are met for these rooms, the tests need not be repeated for rooms of similar construction which are not as directly exposed to the flyover event.

For structures where a number of rooms receive nearly equal exposure to aircraft noise, tests need be conducted in only two of the near-identical rooms.

For residential units, it will usually be sufficient to conduct tests in two rooms. One of the rooms to be tested should be the bedroom most directly exposed to aircraft noise. The other room to be tested should be either the living room, dining room, or family room, whichever is most directly exposed to the aircraft noise source.

When the noise level reduction is measured in an unfurnished room or a room furnished less than normally, the adjusted noise level reduction should be computed

by adding 10 times the logarithm to the base 10 of the ratio of the floor area of the room to the sound absorption in the unfurnished room, but in any event, such correction should not exceed two decibels. The adjusted noise level reduction value should be used in determining compliance with the NLR requirements. If the noise level reduction is measured in a furnished room, no adjustment in the noise level reduction shall be made.

The noise levels measured outside and inside the room under test may be observed directly by simultaneously reading the maximum noise levels on two sound-level meters. Alternatively, the outside and inside flyover event noise signals shall be recorded on magnetic tape with noise level reduction determined by analysis of the recorded signals. In either case, the two measuring systems used for outside and inside noise measurements must each satisfy the requirements for a Type 2 sound level meter according to ANSI S1.4-1971 and be operated in the manner designated by ANSI S1.13-1971 (or latest revisions thereof). Further, the two systems are to be calibrated prior to and following the flyover events so that they indicate the same sound level, within one decibel, for the same noise, using suitable calibration procedures as specified by the sound level meter manufacturer.

APPENDIX G

LDN NOISE MEASUREMENT METHODOLOGY

Extract from McChord Air Installation Compatible Use Zone Study

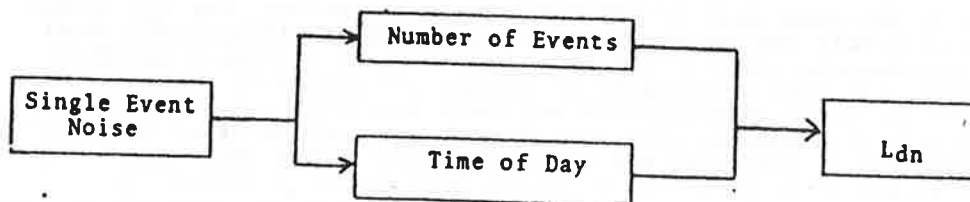
DESCRIPTION OF THE NOISE ENVIRONMENT

Noise Contours: In a study of airport and aircraft noise, two different types of noise measures are needed--one to measure the noise of individual noise events, such as the noise of an individual aircraft flyover, and another to describe the noise environment resulting from a complex of noise events, such as the total noise effect of aircraft operations at an air base.

Noise Environment Descriptor

The methodology used to produce the noise contours contained in this study consists of the Day-Night Average Sound Level (Ldn) System to depict the noise environment. This method of assessing the noise impact of aircraft operations on the area surrounding airports is replacing the Noise Exposure Forecast (NEF) which was used on an interim basis by the Air Force to replace the Composite Noise Rating (CNR) System which was published by the Air Force in 1964. Continuing efforts to improve the CNR procedure over the last 10 years resulted in the development of NEF. Efforts to provide a national uniform standard for noise assessment have recently resulted in the announcement by the Environmental Protection Agency that Ldn will be the standard. In the same way as CNR, NEF and Ldn are methods of assessing the amount of exposure to aircraft noise and predicting the community response to the various levels of exposure. The Ldn values used for planning purposes and for which contours are shown in the body of this report are 65, 70, 75, and 80. Land use guidelines are based on the compatibility of various land uses with these noise exposure levels. For broad planning purposes NEF 30, Ldn 65, and CNR 100 may be considered equivalent, as may NEF 40, Ldn 75, and CNR 115. However, due to technical differences in the three systems, direct comparison or conversion from one system to another can be misleading and is not recommended.

It is generally recognized that a noise environment descriptor should consider, in addition to the annoyance of a single event, the effect of repetition of such events and the time of day in which these events occur. As is typical of the various systems in use throughout the world today, Ldn begins with a single event descriptor and adds corrections for the number of events and the time of day. Since the primary development concern is residential, nighttime events are considered more annoying than daytime events and are weighted accordingly. Ldn values are computed from the single event noise descriptor plus corrections for number of flights and time of day.



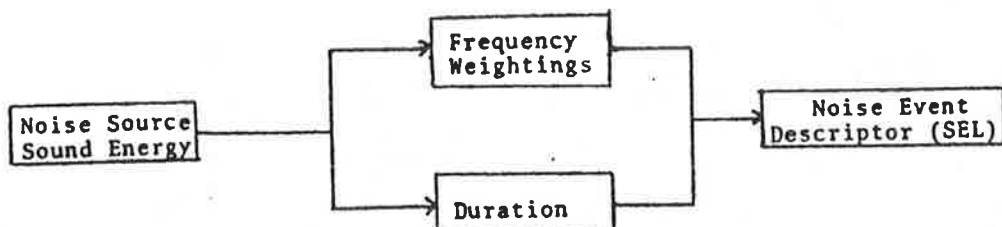
As part of an extensive data collection process, detailed information is gathered on the flight tracks flown by each type of aircraft assigned to the base and the number and time of day of flights on each of these tracks during a "typical" day. This information is used in conjunction with the single event noise descriptor to produce Ldn values. These values are combined on an energy summation basis to provide single Ldn values for the mix of aircraft operations at the base. Equal value points are connected to form the contour lines.

In contrast to the more familiar system of noise assessment, CNR, the Ldn system's accuracy is increased since the resulting noise contours are based on incremental numbers of aircraft on each flight track rather than the step function correction factors used by CNR.

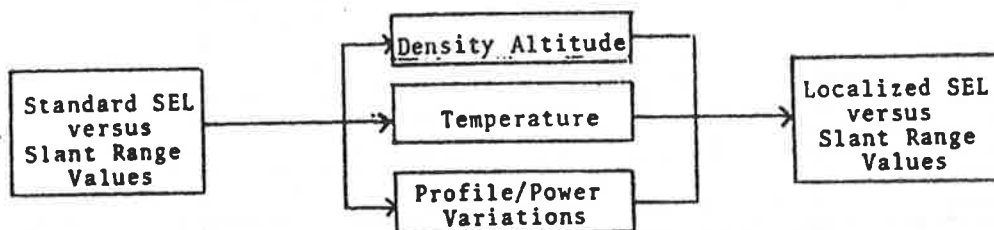
Noise Event Descriptor

The single event noise descriptor used in the Ldn system is the Sound Exposure Level (SEL). The SEL measure is a single value resulting from an analysis in 1/3

or full octave bands of the peak sound within these bands, or can be measured with a sound level meter using an "A" weighting. Frequency, magnitude, and duration vary according to aircraft type, engine type, and power setting. Therefore, individual aircraft noise data are collected for various types of aircraft/engines at different power settings and phases of flight. The following diagram shows the relationship of the single event noise descriptor (SEL) to the source sound energy.



SEL versus slant range values are derived from noise measurements made according to a source noise data acquisition plan developed by Bolt, Beranek and Newman, Inc, in conjunction with the Air Force Aerospace Medical Research Laboratory (AMRL) and carried out by AMRL. These standard day, sea-level values form the basis for the individual event noise descriptors at any location and are adjusted to the location by applying appropriate corrections for temperature, density altitude, and variations from standard profiles and power settings.



In addition to the assessment of aircraft flight operations, the L_{dn} system also incorporates aircraft and engine ground run-up noise resulting from ground engine/aircraft maintenance checks. The following is used: (1) the orientation of the noise source, (2) type of aircraft or engine, (3) number of test runs on a "typical" day, (4) the power settings used and their duration, and (5) use of suppression devices. This data is collected for each ground run-up or test position. This information is processed and the noise contribution added (on energy summation basis) to the noise generated by flying operations to produce L_{dn} contours reflecting the overall noise environment with respect to aircraft air and ground operations.

Noise Contour Production

Data describing flight tracks, flight profiles, power settings, flight track and profile utilization, and ground runup information by type aircraft/engine is assembled by the individual Air Force Base. These data are screened by the major command, Headquarters Air Force, and trained personnel who process the data for input to a central computer. Flight track and utilization data are loaded into the computer and flight track check plots are generated for verification by the base. After verification and incorporation of any required change, L_{dn} contours are generated by the computer using the base supplied operational data, and the standard source noise data corrected to local conditions. The computer system plots these contours which are reviewed and prepared for photographic reproduction by specialists. A set of such contours is provided in the body of this report.

Additional information on the L_{dn} procedure is available in the following:

1. Community Noise Exposure Resulting From Aircraft Operations: Application Guide for Predictive Procedure, AMRL-TR-730105, Nov 1974, from National Technical Information Source, 5285 Port Royal Road, Springfield, VA 22151.

2. Information of Level of Environmental Noise Requisite to Protect Public Health and Welfare With Adequate Margin of Safety, EPA Report 550/9-74-004, March 1974, from Superintendent of Documents, US Government Printing Office, Wash DC 20402.

APPENDIX H

METHODOLOGY FOR COMBINING DATA FOR LAND USE MAPS

Land Use Survey Procedure

The participating entities whose boundaries are within the study area contributed information to develop a generalized land use map. The municipalities of Tacoma, DuPont, and Steilacoom provided copies of their current land use maps. Pierce County provided land use maps generated from their 1981 Pierce County inventory, the 1990 Lakewood Community Plan, as well as a field inventory performed for this study for remaining property. Thurston County could not provide current detailed land use inventory information for the properties adjacent to Fort Lewis. However, they provided assessor information which indicates the tax categories for the properties.

As a general rule, each jurisdiction employed different inventory categories. JLUS staff members reviewed the individual land use inventory categories. Staff then generated land use inventory categories for the JLUS, grouping appropriate categories of the individual entities. The JLUS land use categories and how they were grouped are as follows:

Single Family Residential:

Pierce County 1981 Land Use Survey

Residential (50-10 acres)
Residential (2.5-4.99 acres)
Residential (1-2.49)
Residential
(6 categories from < 2500 sq. ft. to .99 acres)

All other Surveys

Single family

Multi-family:

1991 JLUS Survey

Two-family
Three-family
Four-family
Multi-family (>4)
Mobile home parks
Residential institutions

Tacoma Survey

Two-family
Three or four-family
Five or more-family
Other residence

Thurston County

Not indicated

Pierce County 1981 Survey

Not indicated

Steilacoom Survey

Duplex
Multi-family

1990 Lakewood Survey

High density
residential

Appendix H
Survey Procedure

Commercial:

1991 JLUS Survey

Office
Retail trade
Services
Private recreation

Thurston County

Not indicated

Steilacoom Survey

Commercial

Industrial:

1991 JLUS Survey

Light industry
Heavy industry
Transport
Communication
Utilities

Pierce County 1981 Survey

Light industry
Heavy industry
Utilities
Transportation, airport
Transportation, railroad

1990 Lakewood Survey

Industrial

Public Facilities:

1991 JLUS Survey

Public facilities
Public recreation

Thurston County

Does not indicate

Tacoma Survey

Commercial office
Commercial
wholesale
Commercial retail

Pierce County 1981 Survey

Retail
Service
Recreation

1990 Lakewood Survey

Commercial

Tacoma Survey

Light industrial
Heavy industrial
Communication
Transportation
Utilities

Thurston County

Not indicated

Steilacoom Survey

Not indicated

Tacoma Survey

Quasi-public (Open
Space & Buildings)
Public (Open Space
& Buildings)

Pierce County 1981 Survey

Parks
Public Buildings

Steilacoom Survey
Public
Parks

1990 Lakewood Survey
Public/Quasi-Public
facilities

Places of Assembly:

1991 JLUS Survey
Institution
Educational Facilities

Tacoma Survey
Does not indicate

Thurston County
Does not indicate

Pierce County 1981 Survey
Institutional
Institutional church
Institutional hospital
Schools

Steilacoom Survey
Does not indicate

1990 Lakewood Survey
Does not indicate

Agriculture:

1991 JLUS Survey
Agriculture
Agriculture with house

Tacoma Survey
Agriculture

Thurston County
Agriculture

Pierce County 1981 Survey
Agriculture
Intensive Agriculture
(without house)
Intensive Agriculture
(with house)
Aquaculture

Steilacoom Survey
Does not indicate

1990 Lakewood Survey
Agriculture

Fishing, Mining, Forestry:

1991 JLUS Survey
Resource Extraction

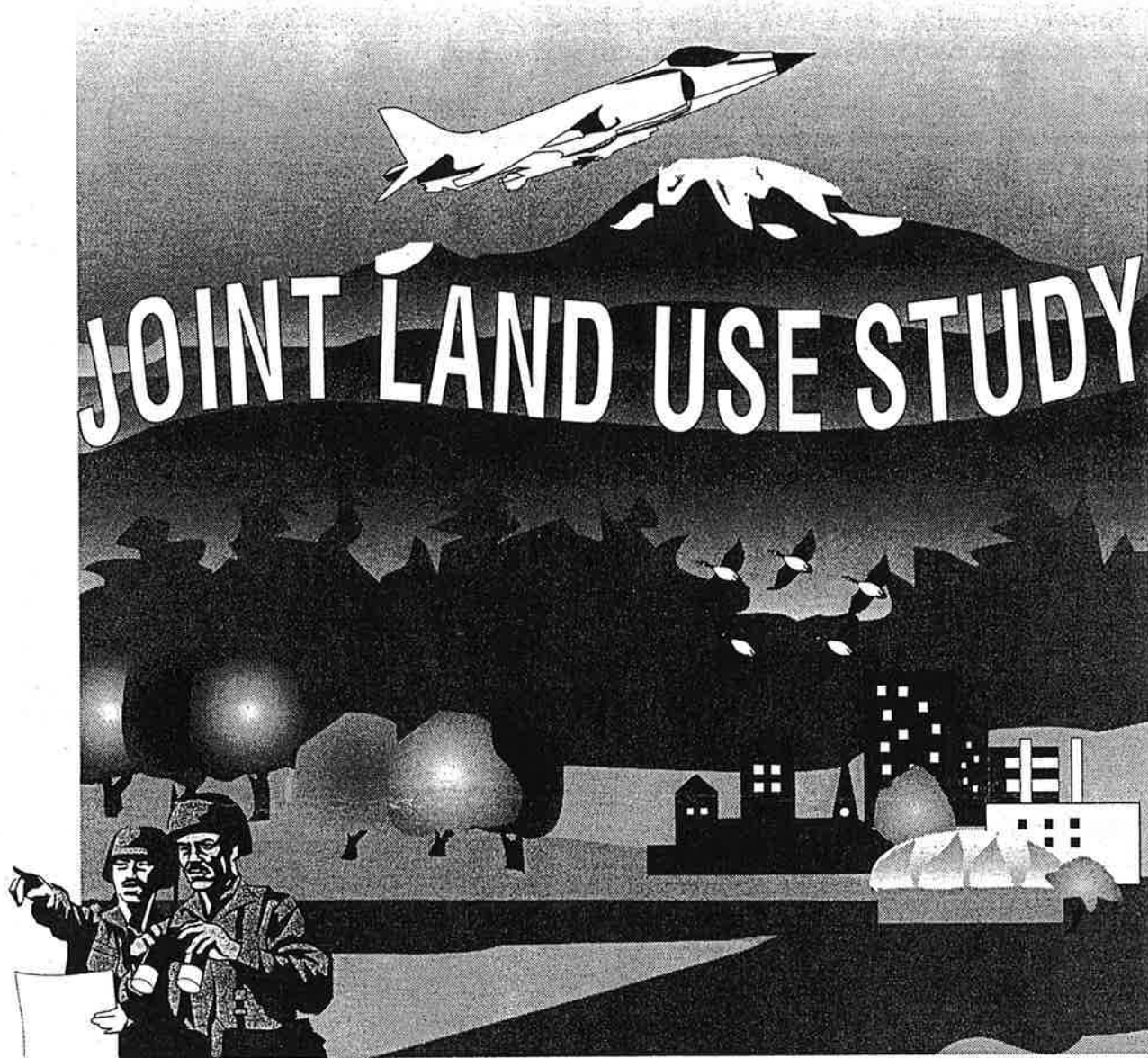
Tacoma Survey
Does not identify

Thurston County
Timber/forest

Pierce County 1981 Survey
Does not indicate

Steilacoom Survey
Does not indicate

1990 Lakewood Survey
Resource Extraction



*A Study of Land Uses
Compatible with or Adjacent to*
**McCHORD AIR FORCE BASE
and
FORT LEWIS, WASHINGTON**

FEBRUARY 28, 1992

Yelm, South Tacoma, and Fort Lewis in January of 1992 to receive public comment regarding the Draft Study; and

WHEREAS, the Pierce County Responsible Official reviewed environmental documents and issued a Mitigated Declaration of Nonsignificance (MDNS) on December 24, 1991, and the MDNS became final January 9, 1992; and

WHEREAS, the Citizens' Review Committee and the Technical Review Committee issued a final Draft on March 1, 1992; and

WHEREAS, the Pierce County Council held a public hearing on September 1, 1992, when oral and written testimony was considered;

NOW, THEREFORE, BE IT RESOLVED by the Council of Pierce County:

Section 1. The Pierce County Council hereby adopts the "Joint Land Use Study: A Study of Land Uses Compatible With or Adjacent to McChord Air Force Base and Fort Lewis, Washington", dated February 28, 1992, which is included as Exhibit "A" attached hereto and by reference incorporated herein.

Section 2. The Pierce County Council hereby directs that the recommendations of the Joint Land Use Study be integrated into updates of land use and environmental regulations, and other related public programs.

PASSED this 1st day of September, 1992.

ATTEST:

PIERCE COUNTY COUNCIL
Pierce County, Washington


Clerk of the Council


Council Chair

Approved As To Form Only:


Deputy Prosecuting Attorney

1
2 FILE NO. 160

PROPOSAL NO. R92-103

3 Sponsored by: Councilmember Paul Cyr

4 Requested by: County Executive

5 RESOLUTION NO. R92-103

6 A RESOLUTION OF THE PIERCE COUNTY COUNCIL ADOPTING THE "JOINT LAND
7 USE STUDY: A STUDY OF LAND USES COMPATIBLE WITH OR
8 ADJACENT TO MC CHORD AIR FORCE BASE AND FORT LEWIS,
9 WASHINGTON", DATED FEBRUARY 28, 1992; AND DIRECTING THAT
10 THE RECOMMENDATIONS THEREIN BE INTEGRATED INTO UPDATES
11 OF LAND USE AND ENVIRONMENTAL REGULATIONS.

12 WHEREAS, the "Joint Land Use Study" (Study) referenced in the
13 title of this Resolution is the result of a collaborative planning
14 effort involving the military installations of Fort Lewis, McChord
15 Air Force Base, and Camp Murray (Washington National Guard) and the
16 surrounding local governments of Thurston and Pierce Counties, Cities
17 of Rainier, Yelm, DuPont, Steilacoom, Tacoma, Roy, and Nisqually
18 Indian Tribe, and;

19 WHEREAS, the goal of the Study is to encourage compatible
20 development and redevelopment in each affected jurisdiction that
21 balances the sustaining local military missions with the long-term
22 community land use needs; and

23 WHEREAS, participating jurisdictions provided letters of support
24 and concurrence to initiate the Study and pursue implementation of
25 the final recommendations; and

26 WHEREAS, Pierce County was selected by participants to serve as
27 lead agency for contractual and environmental review; and

28 WHEREAS, each jurisdiction agreed to participate in the
development of the Study and to provide representatives to the
Citizens' Review Committee and the Technical Review Committee; and

WHEREAS, the Citizens' Review Committee and Technical Review
Committee conducted five workshops in the Spring of 1991 to identify
citizens' concerns and preferences; and

WHEREAS, the Pierce County Planning and Land Services Department,
in conjunction with the Citizens' Review Committee and the Technical
Review Committee, made recommendations which, when implemented, will
help create an environment conducive to continuing operations at the
military installations; and

WHEREAS, the Citizens' Review Committee and Technical Review
Committee held five community workshops in Spanaway, Steilacoom,

cc: Executive, Joe Stortini ✓
Operations, Fred Anderson ✓
Utilities, Joe Scorcio ✓
PALS, Chuck Gorden ✓
Debora Hyde ✓
D. Cardwell ✓
Participating Jurisdictions ✓
Library ✓
Book ✓

9/15/92
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